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STEEL

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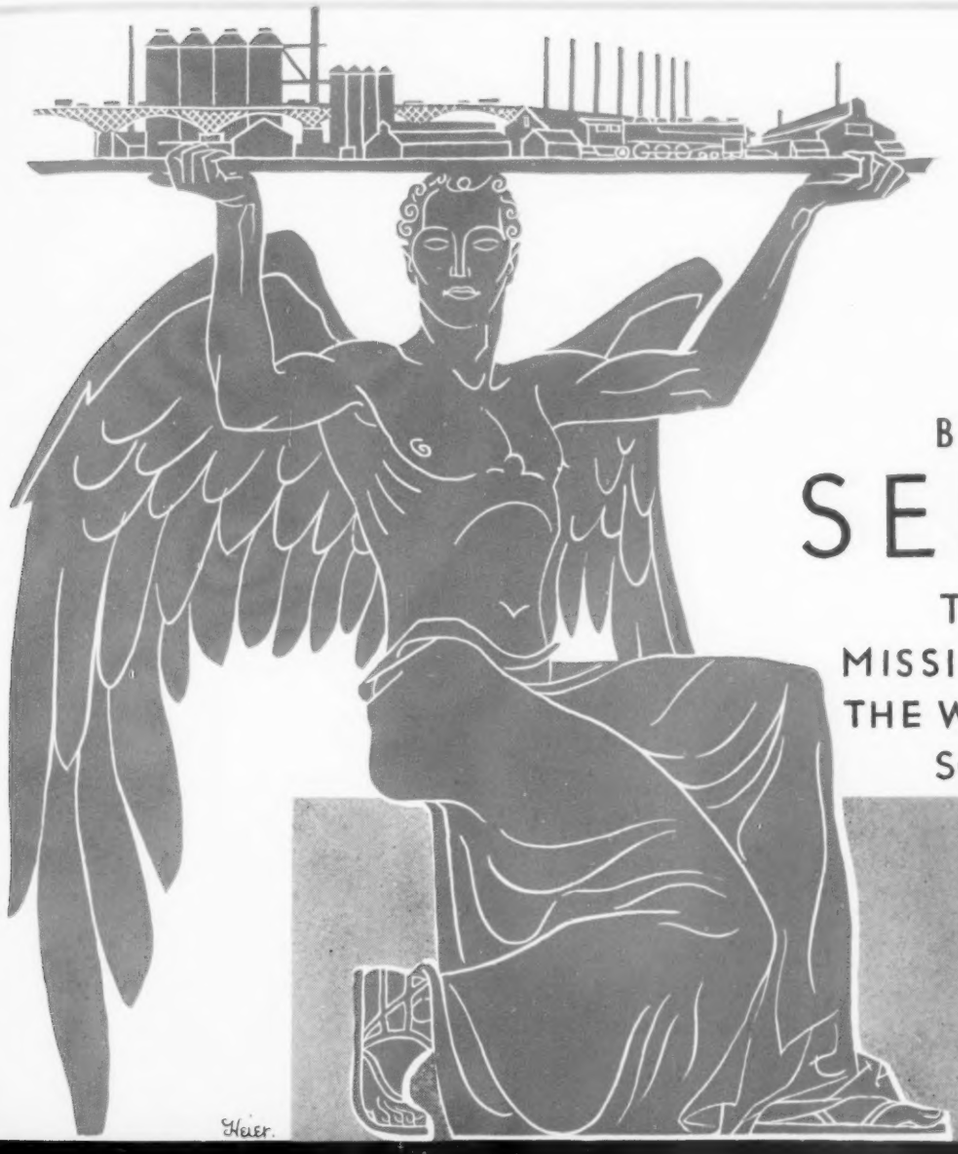
For forty-eight years—IRON TRADE REVIEW



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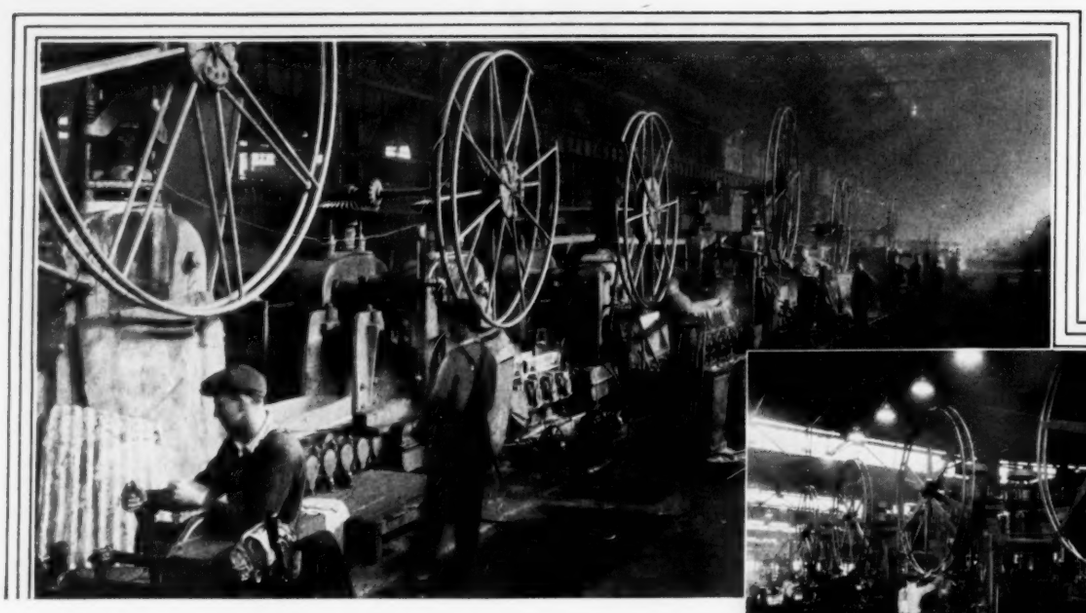
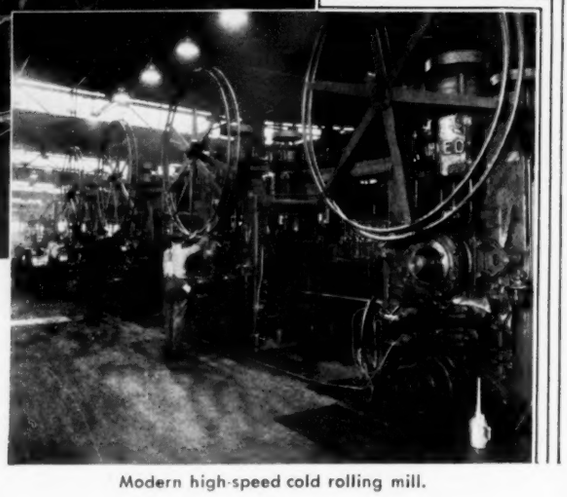


Roughing and edging train of one of the hot rolling mills in the Acme plant at Riverdale, Ill.



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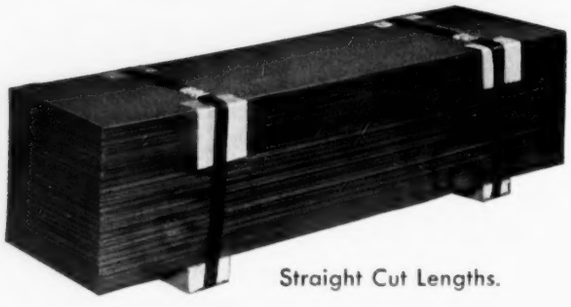

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Volume 91 Number 7

STEEL

For forty-eight Years—IRON TRADE REVIEW

PRODUCTION • PROCESSING • DISTRIBUTION • USE

The Week in Perspective

THE quip of a financial authority—the panic is over, all that remains is hard times—is apt for iron and steel. Casting up the industry's position, on the credit side are vastly improved sentiment, broader inquiry, desire for protection at current prices, easier credit, expectation that relief funds will release important steel-consuming projects. On the debit side is only the fear that sentiment may have made progress too rapidly. A 14-15 per cent steel operating rate is a static factor.

Scrap Disappears as Prices Advance

From August the industry as usual has been expecting little, content to await Labor day for a turn, hence a noteworthy expansion of interest in raw materials is the more heartening (p. 41). Of both pig iron and scrap, many consumers are disposed to stock a little. Scrap, easily volatile, is advancing and the supply has almost miraculously disappeared, as dealers sit tight. Having ridden the market down, the trade now believes it has a return ticket.

Price Cutting May Herald the Turn

Pig iron prices have remained steady except in the East, where Royal Dutch iron is undercutting the market (p. 51). In sheets the temptation to make concessions for specific business (p. 42) has been more than many mills could withstand. But the spectacle of irregular prices just when the markets appear to be making the turn is a concomitant of recovery. Elimination of weakness now may lay the solid foundation of a rise next month, when fourth quarter prices are determined.

Auto Prices Based on Vanished Volume

Automobile manufacturers are not willing subscribers to the doctrine of rising prices. Estimating costs for 1933 models, they are the more disposed to be bearish because retail automobile prices, while close to 1929 levels, are based upon volume, which is now lacking (p. 17). In addition, manufacturers are harassed by options in finish which provide custom cars at standard prices. Output of 112,600 units in July was the lowest in eight months; August is falling below 100,000 as Ford shuts down.

Railroads Chief Repository of Steel Hopes

Canvassing their outlets, steel producers invariably return to the railroads as promising. Continuation of STEEL's survey of the railroad situation discloses (p. 11) that buying has slipped half a billion dollars under par since 1929, by 1936 over 500,000 freight cars will have been scrapped, 74 per cent of all railroad

Dwarfing Eiffel tower and Empire State building, this 2063-foot tower taking 15,000 tons of steel and costing $3,000,000 may be erected adjoining the 1933 exposition grounds at Chicago. Frank A. Randall, Chicago, is architect

traffic is immune to truck competition. . . . From the Erie comes the best track fastening order in months (p. 45). . . . Individual action by the carriers on federal loans (p. 13) for new equipment and repairs is probable.

Only Uncertainty Is Extent of the Jolt

Soon the bad news from the Imperial Economic conference at Ottawa will be out (p.13), the probability being that Canada will protect tin plate, small shapes, pipe and tubing, and rails from all comers but give the edge to English mills on practically all other products. . . . Japan, shielding her own producers (p. 13), has put the duty on Indian pig iron up 260 per cent, but reaching out for new markets has elbowed European mills out of a 30,000-ton order for South Africa (p. 55). Poland, meanwhile, is taking more Russian business.

Ford Saves by Typing Dies in Presses

Through a new process whereby dies are typed in presses or steam hammers from master types much like impressions are made in wax, Ford is effecting (p. 21) substantial savings in the production of forging and trimming dies. . . . When seam-like defects persisted in the spindle end of steering knuckles a drop forge interest solved the difficulty (p. 32) by changing to blanks higher than they are square. . . . Only a very thin chromium coating can be applied (p. 32) to dies for forming operations subjected to heavy impact.

27 Papers on Metal Congress Agenda

Twenty-seven technical papers dealing with metallurgy, steelmaking, heat treating and kindred subjects are scheduled for presentation at the annual meeting of the American Society for Steel Treating (p. 30), one of nine groups participating in the National Metal congress and exposition at Buffalo, Oct. 3-7. . . . A co-operating group—the machine shop practice division of the American Society of Mechanical Engineers—at this Buffalo congress has scheduled three sessions, also crammed with papers.

With Engineers in the Mills

Exposed rivet heads on hot-dipped galvanized steel may now be protected (p.28) by a circular flanged cap of zinc soldered to the galvanized surface. . . . Under pressure, steel will absorb lubricating oil to a startling degree (p.28), as many as 21 layers being possible. . . . Appreciable embrittlement of 18-8 chrome-nickel steels containing 0.06 and 0.085 per cent carbon is found to be produced (p. 26) after a 1000-hour draw at the temperature range 1000 to 1600 degrees Fahr., by notched-bar impact studies.

The VOICE of INDUSTRY

Communications appearing here do not necessarily reflect the opinion of STEEL *or of its editors.*

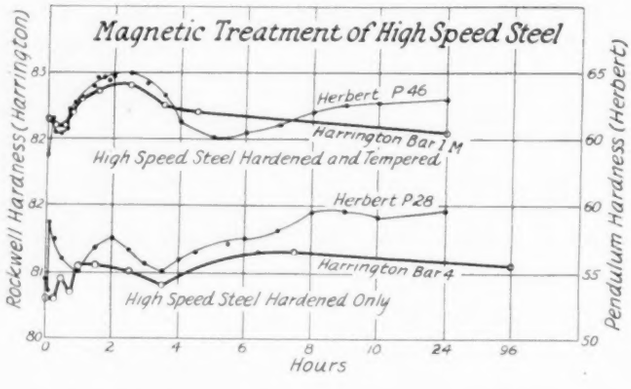
To the Editor:

My attention has been drawn to the item headed "Rockwell Hardness Unchanged by Magnetic Treatment," published in STEEL, June 20, p. 31, dealing with Mr. R. H. Harrington's investigation of my magnetic process.

As I feel sure you would wish your readers to form an unbiased judgment on the matter I have taken the liberty of plotting Mr. Harrington's series of hardness numbers and in the same figure, shown below, my own pendulum hardness readings on similar steel after rotary magnetic treatment.

My own conclusions are: That Mr. Harrington's treatment undoubtedly set up hardness fluctuations; and that these fluctuations were similar to those which I have produced in innumerable experiments and are quite characteristic of the behavior of hard steel, namely a periodic alternation of softening and hardening, rapid at first and then slowing down to a periodicity of several hours and finally damping out.

Fluctuations of Rockwell hardness are excessively feeble. The steel was in a very hard condition and the Rockwell hardness scale is a close one in the higher regions. It says much for the accuracy of the observer



and of the instrument that readings so absolutely consistent and characteristic with the normal behavior of hard steel after magnetic treatment should have been obtained.

Although the hardness changes produced under favorable conditions are not small (increases of hardness up to 70 on the Vickers scale have been reported to me), unsuitable conditions such as too strong or too weak a magnetic field only give rise to feeble fluctuations, and the investigator is severely handicapped unless he uses a sensitive instrument. The instrument used in my own investigations, the pendulum hardness tester, is exceptionally sensitive and has an open scale in the higher regions of hardness. It is therefore to be preferred for investigations of this character.

Experimental conditions used by Mr. Harrington were not fully stated. It is almost certain that they were unsuited to the particular steel experimented upon. It has been my experience that the most favorable conditions for treating a given steel are not necessarily found at the first guess, but only after careful investigation under varying conditions of field strength and temperature.

Yours faithfully,

EDWARD G. HERBERT

Manchester,
England

Railroad Equipment Survey Shows Heavy Steel Needs

WITH the federal government sponsoring a plan for the Reconstruction Finance Corp. to loan money to the railroads for maintenance work and to purchase new equipment, and the prospect that they will accept such loans at an interest rate of 5 per cent, the railroads recently have been making surveys to determine specific requirements.

Some fears have been expressed that these loans will prove to be the entering wedge for government ownership of the railroads, but as pointed out in STEEL (Aug. 8, page 12) the loans so far approved, $213,000,000—chiefly for retiring obligations—amount to less than 1 per cent on the Class I railroads property investment of $26,350,000,000. The loans do not equal the amount—$220,000,000—expended by the railroads for iron and steel material and supplies in 1931, when expenditures for such purpose were about half the average for the past ten years.

Must Enliven Buying Power

Though it has not appeared as yet how much the government contemplates loaning for maintenance work and new equipment, it is evident that much larger sums must be forthcoming to reinforce railroad buying power, until revenue increases to such a point that the roads will be able to resume normal purchasing.

Estimates as to the steel that would be immediately called for to build up equipment have varied from half a million tons to several million—the exact amount not being known and not likely to be determined until the railroads have made a complete investigation.

Some idea of the railroads' pent-up requirements for iron and steel may be obtained from the fact that their purchases for 1930—when they started to retrench—were $67,366,900 less than the annual average in the preceding eight years. Purchases for 1931 were $177,000,000 below that average, and it is a fair assumption that for the current year they will be $287,000,000 less than the average. On this basis, iron and steel purchases since 1929 have been curtailed at least a half billion dollars and this does not include the restriction on cars and locomotives, expenditures for which are figured in with capital outlay.

Rails Comprise One Fourth

Of the $220,000,000 for iron and steel materials and supplies in 1931, a little less than one-fourth—$50,800,000—went for rails. Examining this item separately and comparing with previous years, purchases since 1929 apparently have been reduced approximately $148,000,000. In rails as in all other materials and equipment, the policy has been to buy no more than absolutely essential, with the result that a tremendous replacement demand has been built up. Coupled with this there has been a drastic retrenchment in maintenance work; numerous reports have been heard of "slow" orders being issued to trains, due to uneven trackage.

The effect that a resumption of railroad purchasing on a broad scale is likely to have on steel operations is indicated by numerous incidents. When roads send through imperative releases for rails and track materials, the demands have been so urgent that some mills have had to work day and night for brief periods. Needs have not been anticipated; hand-to-mouth buying has been carried to unparalleled extreme; the buying has been done only as a last resort to keep the consumer from "starving."

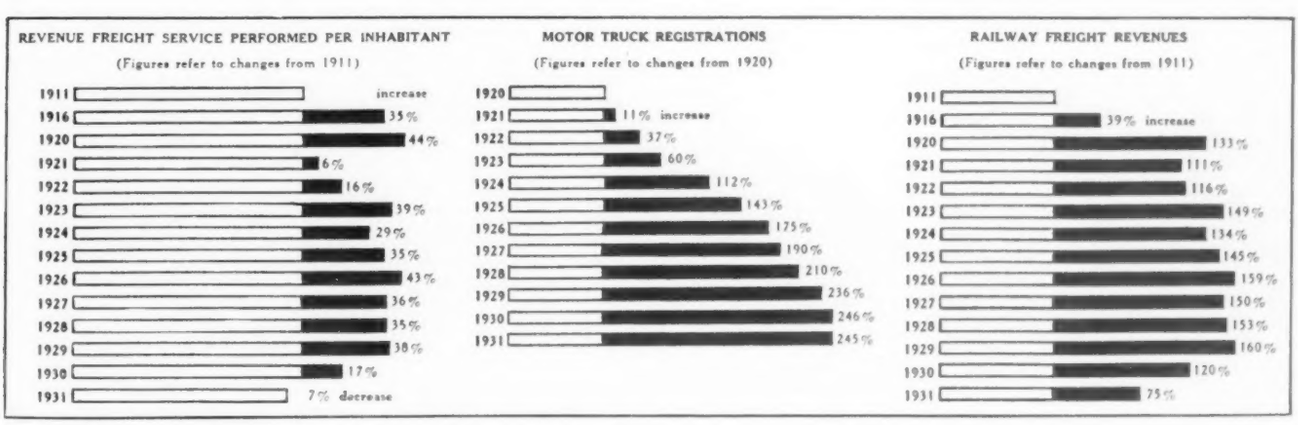
In the first five months this year railroads spent only $157,500,000 for maintenance of way, compared with $235,800,000 in the corresponding period of 1931. For maintenance of equipment in the five months this year, expenditures totaled $278,200,000 against $372,200,000 last year. Expenditures for maintenance of way in 1931 were $536,305,000; and in 1930, $713,300,000. For maintenance of equipment in 1931 the total was $829,400,000; and in 1930, $1,027,000,000.

New Car Orders Vanish

Domestic freight car orders for the first seven months this year—384—are on the basis of about 660 for the full year. By comparison with previous periods, freight car orders may be said to have almost vanished Nothing like this shrinkage has occurred in the history of modern railroad transportation. The 1931 purchases—10,694—were far less than for any year since 1900, but these for 1932 are only 6 per cent of that total.

For the years 1901 to 1930, inclusive, purchases averaged 129,500 annually. The lowest point in this period to which the purchases dropped was in 1921—with 23,346, and this was followed immediately by an increase to 180,154 in 1922.

The increase in freight car capacity—such as from 36.9 tons, average in 1911, to 47 tons in 1931—has been an important factor making for



A GRAPHIC illustration of how per capita railroad freight has been reduced as the number of trucks in service has increased; and the effect of truck competition on railroad freight revenue. Seventy-four per cent of the railroad freight originates with heavy products in which the trucks have not yet made serious inroads, and in which the freight rates are comparatively low. Twenty-six per cent originates with manufactures and less-than-carload tonnage, taking the higher rates, in which truck competition has been the most severe. Railroads now are inaugurating and extending pick-up and delivery service, using trucks. Chart data, from Committee on Public Relations of Eastern Railroads

fewer car purchases in recent years. With this 27 per cent gain for the unit, there has been a 32 per cent increase in total freight carrying capacity.

But a shorter range comparison shows that from 1930 to 1931 there was a gain of 0.4-ton in average car capacity, while total capacity was reduced by 2,779,768 tons. If the railroads were to restore this capacity with 47-ton cars they would have to purchase 59,144. This is independent of further loss in aggregate capacity incurred in 1932. It also assumes that the cars remaining classed as "in service" are actually fit for service, whereas many of them are in bad order or obsolete.

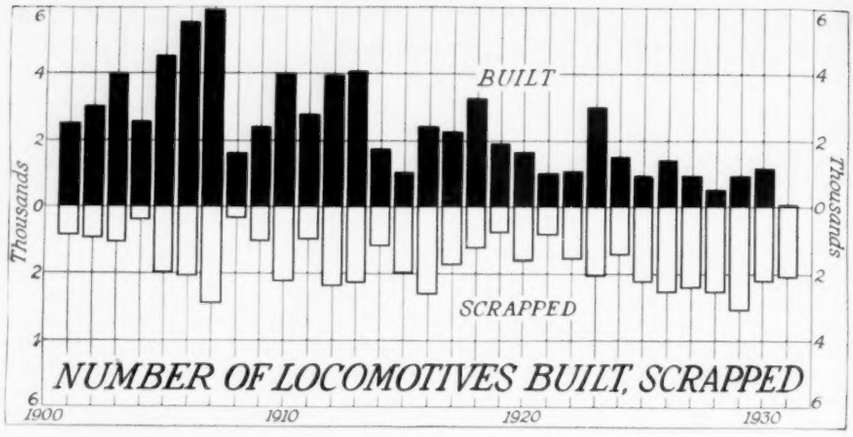
It is obvious from reduced purchases in recent years that cars are being classed as "in service" far beyond the time when they would be listed as in bad-order, or scrapped, under normal conditions. Yet thousands of these cars have been lying idle on sidings, in out of the way places, stripped of valuable parts, and have suffered greater depreciation than if they had actually been engaged in carrying freight.

Will Scrap Half Million

Basing its conclusions on a recent survey, the American Railroad association estimates that 500,000 freight cars will be scrapped by 1936. The survey included 43 railroads, accounting for 65 per cent of the 2,200,000 cars now classed as "in service." Four large systems have definite plans to scrap 29 per cent of their equipment by 1936; 24 others report they will retire 23.5 per cent of their cars by that year. As a result of this survey it appears that 750,000 so-called "surplus good order cars" is a fictitious figure; that the railroads could not raise that number if called upon to do so, and that a car shortage might develop if industrial operations pick up quickly.

Truck competition has retarded railroad freight growth. But 56 per cent of their revenue freight originates with the country's mines, where trucks cannot compete appreciably; 11 per cent with agriculture; 5 per cent with lumber; 2 per cent with animals; leaving 23 per cent for manufactured products, and 3 per cent for less-than-carload tonnage. Trucks cut in principally on this l.c.l. business and on manufactured products, taking the higher rates, and thus reducing railroad revenue, but leaving the railroads the products of the mines, grain, lumber, and the heavy manufactured articles.

"Railroads are being used at present to an extent of less than one-half of demonstrated capacity," said the Association of Railway Executives recently. As it has been estimated that the steel industry could operate, on the basis of present economies at 25 per cent without actual loss, the resumption of railroad buying even on a very moderate scale may mean the difference between loss and no loss.



NUMBER OF LOCOMOTIVES BUILT, SCRAPPED

ONLY 39 domestic locomotives were ordered in the first six months this year. Last year the railroads installed 124, *compared with* 1160 *in* 1930 *and* 1229 *in* 1929. *Coming out of depression in* 1922 *they installed* 1226; *in* 1923 *they added* 4360; *and in* 1924, 2786. *Despite the necessity for making equipment last as long as possible, the railroads had to scrap* 2119 *locomotives in* 1931 *and* 2204 *in* 1930. *The total number of locomotives in service for* 1931 *was* 55,400, *and the percentage in need of repairs was* 20.6, *the proportion increasing this year*

Innumerable instances come to light revealing the necessity for improvement in railroad equipment, and the railroad companies' inability or unwillingness to unloose the purse-strings. It is estimated that to move the northwestern grain crops—reported to be the heaviest in 15 years—will require over 100,000 cars, compared with 79,000 last year. Some of the roads are understood to anticipate difficulty in obtaining the necessary equipment.

Just before the recent federal tax was placed on automobile tires, an Akron company desired to move a large shipment quickly. The railroad—one of the leading carriers—could scarcely assemble 1100 cars necessary to handle this business.

Patchwork Repairs Made

Idle locomotives have been partially dismantled to get parts to patch up others. A telegram was received recently by a manufacturer from an important southern coal road asking for a price on six ferrules, bushings for boiler tubes whereas it formerly bought them by the scores; another inquiry for 163 from a carrier which ordinarily would buy them in 1000-lots.

In still another instance, a road needed three air pump bushings, and a canvass by wire and telephone was made of its entire system. No bushings were in stock, and one of the railroad's employes finally drove to the manufacturer's plant in an automobile and picked up three bushings, at a total cost of 45 cents.

The Pennsylvania railroad has, according to conservative estimates, 700 locomotives laid up in eastern yards, a large majority of which are reported not in condition to operate. In one Pennsylvania town several hundred locomotives in the yards there lie idle, with cabs boarded up and a large number of them have been so for 18 months to two years. Rust and deterioration have taken a heavy toll. A check-up revealed that the Pennsylvania railroad had only 5000 tons of rails in stock for its entire system of over 10,000 miles of track. This necessitated a 20,000-ton release though the road previously contemplated releasing only 10,000 tons.

Five Days To Get One Car

In one recent instance a midwestern company making track material wanted a flat car for an urgent shipment and was told it would take five days to obtain one. The company also learned that nearly that much time is necessary to obtain any sort of freight car except a box car.

This manufacturing company is receiving parts, such as track points and frogs, from railroads to be welded, and in many instances the cost of the work is within 80 per cent of the cost of new parts. The life of the repaired material is rather indefinite compared with that of new products. Another company is receiving carloads of springs from the railroads for retempering. One explanation for the railroads' apparent false economy in small ways is the fact that they are able to obtain money for repair work that is not made available for the purchase of new parts.

A western railroad specified five steel couplers from its source of supply, where formerly it released couplers in carload quantities. When the move to economize set in, its first began by stripping idle cars of couplers but soon ran out of these

parts. When the order for five couplers came through it represented needed parts for exactly five cars and no more. A tendency is noted on the part of some railroads to forge down bar stock, mainly in tool steel analyses. Instead of ordering a needed size they go to disproportionate

(*Please turn to Page* 45)

Loans Are Up to Each Road

New York—Individual action by the railroads in obtaining loans from the Reconstruction Finance Corp. for purchasing new and repairing old equipment seems probable. Association of Railway Executives is unwilling to take joint action, as some carriers are hesitant to put up for these loans collateral which might be more urgently needed later. If individual roads are pressed for equipment, 3-year loans at not to exceed 5 per cent and not to be included in fixed charges until the affected equipment is put in service, are probable.

Japan Bars Indian Iron

Drastically increased import duties virtually prohibit importation of pig iron from British India into Japan, according to Vice Consul Hutchinson, Tokyo, to the department of commerce. On June 15 the Japanese tariff on pig iron was increased 260 per cent from 1.66 yen per metric ton to 6 yen. In anticipation, Japanese traders moved in 74,592 tons from India in the first four months of 1932, compared with 35,486 tons received in the same period of 1931.

Empire Preference Seen for Products Not Made in Canada

TORONTO, Ont.—With the Imperial Economic conference, in session at Ottawa for three or four weeks, drawing to a close, interests associated with the iron and steel industry in Canada do not look for any great delay in bringing about changes in tariffs and completing other details which will react to the benefit of business in this industry.

While it has been announced in official quarters that Canadian and British steel interests have reached agreement regarding plans for increasing trade in iron and steel products between the two countries, no official word has been forthcoming as to what materials will be affected.

Will Shield Home Mills

From one official, it was learned, however, that it would be the primary lines, and that no preference would be granted on materials at present produced in Canada. Pipe and tubes, both seamless and welded, will continue on the protected list, as also will the smaller sizes of structural shapes and other materials now being manufactured in Canada.

The larger sizes of structural steel, angles, etc., are understood to be in the list calling for preferential trade agreement between Britain and Canada, and also some classes of rails not now rolled in Canada.

Some indication of what might be expected in connection with proposals submitted at the conference is gathered from the announcement that the Toronto Transportation commission has just placed an order in Britain for 600 tons of steel rails for the Toronto system.

Formerly, these rails were purchased in the United States, and thousands of tons were purchased in the past. While Canadian mills roll rails for the railroads they do not turn out electric rails; thus it is understood that these will be included in the British preferential list.

Producers Here Will Suffer

Previously large tonnages of structural shapes were imported from the United States, but these also will be favored by preferential arrangements, as also will many other lines that formerly were imported from the United States. It is believed that a very large portion of Canada's imports of iron and steel and their products, which in 1931 totaled $194,000,000, by far the greater part of which was from the United States, and only about 10 per cent from Britain, will in future come from the latter country.

According to information gathered from delegates at the conference, it is the intention to build up a much larger trade in iron and steel within the Empire, which in turn will be directly at the expense of United States producers.

It is expected, on the other hand, that such special preferential treatment will tend to bring more United States plants into Canada, especially such concerns as are desirous of sharing in the special benefits to be derived from the increased Empire trade.

A move is on foot to set new standards for all products made in the Empire, thus wiping out an advantage of United States steel mills in Canada, where their specifications govern.

◆

STEEL construction makes possible seating 120 passengers in a double-deck car the same size as those at present accommodating 76, now being put in service experimentally by the Long Island railroad. Seats are staggered to save headroom and each has a window. The tiers are reached by a step up or down from the central aisle platform. — Wide World Photo

◆

Russian Production Falls

Production of iron and steel in Soviet Russia in the first ten days of June showed a slight recession from the last ten days of May, according to the USSR chamber of commerce. Output of pig iron in the first ten days of June totaled 173,710 tons which was 78.2 per cent of schedule, and of steel, 153,523 tons or 74.4 per cent of the quota.

The Business Week In Washington

AMERICAN IRON AND STEEL INSTITUTE, New York, has filed application with the tariff commission asking for a 50 per cent increase in the duty on structural shapes not assembled, manufactured or advanced beyond hammering, rolling or casting, also shapes machined, drilled, punched, assembled, fitted, fabricated for use or otherwise advanced.

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Bureau of public roads has agreed to a relaxation of regulations which will permit some states to make immediate use of emergency federal funds for highway construction. Federal appropriations included the regular $120,000,000 and an equal emergency fund. In some projects machinery is not permitted, to spread work as far as possible, no convict labor may be used, 30 hours is the maximum work week.

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Formation of the Commodities Credit Corp. in New York by Eugene Meyer Jr., former head of the Reconstruction Finance Corp., with a capital of $100,000,000 to be loaned to make possible the purchase of manufacturing requirements in advance, is expected by the administration to be more helpful to agriculture, especially cotton, than the metalworking industries, but some indirect benefit is likely to flow from it.

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With the induction of Roy D. Chapin as secretary of commerce to succeed Robert P. Lamont, resigned to become president of the American Iron and Steel institute, the department has assumed the vigor and expectation of the early days of the Hoover regime in 1921. Thus far no new policies have been outlined, as the effects of the economy program must first be digested. Secretary Chapin has indicated that he believes a promising turn in business has been made.

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Interstate commerce commission has announced that last year the revenue derived from freight on class I railroads fell off $850,000,000.

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Both imports and exports of iron and steel products in the British trade declined in June compared with May, according to the department of commerce.

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Refunds of more than $500,000 have been granted the Pittsburgh Steel Co. and its subsidiaries by the bureau of internal revenue for overassessments of income and profits taxes.

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A Mexican presidential decree, officially published Aug. 2 and effective ten days thereafter, increases import duty on iron or steel fence wire, tubes, piping and connections of iron or steel.

Lamont Now in New York

Robert P. Lamont, new president of the American Iron and Steel institute, will remain in New York until after the meeting Aug. 18 when he will formally be elected. Then, it is reported, he will spend a 3-week vacation in the Middle West. Howard H. Cook, secretary of the institute, has returned after a brief illness.

Financial News of Steel Industry

CRUCIBLE STEEL CO. OF AMERICA reports net loss of $1,681,581 after charges for the first half year. With preferred dividends totaling $437,500 having been paid, the amount deducted from surplus was $2,119,081. Assets June 30 totaled $111,978,849, against $114,952,971 on Dec. 31, 1931.

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Newton Steel Co., Monroe, Mich., and Newton Falls, O., reports net loss of $220,811, after charges, in the second quarter, against a loss of $130,244 a year ago.

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Sharon Steel Hoop Co., Sharon, Pa., reports net loss of $941,900 after depreciation, interest and other charges in the first half, against net loss of $681,016 in the first half of 1931.

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Superior Steel Corp., Pittsburgh, for the second quarter reports net loss of $125,128, after charges, compared with $150,644 loss in the first quarter, and $96,609 loss in the second quarter of 1931.

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Truscon Steel Co., Youngstown, O., reports net loss of $533,040 for the first half compared with net loss of $286,000 the first half of 1931. For the quarter ended June 30 net loss was $173,736, against net loss of $359,304 in the first quarter of 1932.

Will Make Apparatus For Shipping Sheets

Stevenson Co., Wellsville, O., has become affiliated with Material Handling Inc., also of Wellsville, and both companies have been licensed by American Rolling Mill Co. to manufacture and sell apparatus covered by the 10 Robert T. Romine patents acquired by it relating especially to the shipping of sheet metal in "floating packs."

The method, sometimes called the "unit load method," is used to preserve the polished surface of sheets, to prevent knocking out of ends of freight cars by shifting of the load and to greatly reduce the cost of loading and unloading by handling packs of 10 tons more or less, instead of single sheets by hand. Packs are handled in and out of cars by stock lifters or portable cranes and are carried through the plant by special electric trucks. The method was described in the Jan. 13, 1927 issue of STEEL.

Under Romine truck patents Material Handling Inc. has licensed Elwell-Parker Co. and Baker-Raulang Co., Cleveland, as sources of supply for such trucks. Licenses granted under some of the patents have been granted to Western Electric Co. and Hudson Motor Car Co. Material Handling Inc. will handle sales and service in this arrangement with the Stevenson Co. The two companies also operate under nearly 100 additional Romine patents not included in the American Rolling Mill Co. arrangement.

Corrigan, Newton Merger Plan Is Near Approval

Deposit of stock up to Aug. 12 for the "affiliation" of Corrigan, McKinney Steel Co., Cleveland, and Newton Steel Co., Monroe, Mich., and Newton Falls, O., was on a basis indicating that the negotiations for a union of these companies could be concluded Aug. 15 or shortly afterward, as contemplated by the plan announced early in July.

Corrigan-McKinney common stock, now 2500 shares of $100 par, would be broken up into 1,500,000 shares of $1 par. For each share of Newton preferred, one common voting and one common nonvoting share of Corrigan-McKinney would be exchanged. For each Newton common share 4/10 of a common voting share of Corrigan-McKinney and 1/10 of a common nonvoting share would be exchanged.

There is no official basis for the rumor that the tin plate equipment of the N. & G. Taylor Co., Cumberland, Md., being operated by Corrigan-McKinney, will be transferred to the Newton Falls plant, although it has been rumored that this plant would be converted into a tin plate mill.

Receivers for Gould Coupler

Leon A. Townsend, Baltimore, and Charles J. Symington, have been appointed receivers for the Gould Coupler Co., Depew, N. Y.

Industrial Men in the Day's News

Norman W. Foy, Western Manager of Sales, Republic Steel Corp.

FOR 20 years, or since he was 16, he has been identified with the iron and steel industry.

DURING the war he assisted in the purchase of steel for munition and other purposes, at Washington.

SINCE 1919 he has been with Republic, at Philadelphia, Buffalo, Boston, Birmingham and Chicago.

MANY of the leading steel consuming centers have contributed to the selling experience of Norman W. Foy, recently made manager of sales in the Middle West, with headquarters in Chicago, for the Republic Steel Corp., Youngstown, O. As noted in STEEL July 25, he succeeds H. S. Schroeder in that position.

Mr. Foy was born in Baltimore in 1895, and has been identified with the steel industry for more than 20 years. He joined the Baltimore office of the Carnegie Steel Co. at the age of 16 in the capacity of clerk and stenographer, remaining with the company until the war. During the war period he served as assistant in charge of steel buying for the government at Washington. His connection with the Republic organization dates from 1919, when he became a salesman for the former Republic Iron & Steel Co. with headquarters in Philadelphia. Three years later he was made manager of the Republic offices at Buffalo, and in 1924 he was transferred to Boston in charge of the New England district.

Mr. Foy's next role was district sales manager at Birmingham, Ala., where he was located from 1928 until the formation of the Republic Steel Corp. in 1930. At the latter date he was made assistant manager of sales at Chicago, remaining there until his recent promotion.

W. H. A. AUSTIN, former secretary and New York sales representative of the Eastern Steel Co., was elected president and a director of the Bergen Point Iron Works, Bayonne, N. J., effective Aug. 1. He succeeds the late Thomas H. Alison, who earlier this year succeeded the late Augustus Smith, founder of the Bergen Point Iron Works.

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Ralph P. LaPorte, formerly a member of the executive staff of the Edward G. Budd Mfg. Co., Philadelphia, and well known in the manufacturing contacts of that organization, has been appointed manager of manufacture of the International Heater Co. of Utica, N. Y.

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Edward C. Hvale, for the past ten years with the Weirton Steel Co. and for 21 years prior to that with the Illinois Steel Co., has been made western sales manager for the N. & G. Taylor Co., Cumberland, Md. His headquarters are at 208 South LaSalle street, Chicago. He succeeds L. J. Voyer, who assumes another position in the Taylor organization.

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J. C. Williams, president, Weirton Steel Co., Weirton, W. Va., sailed recently from New York for Europe. He will be gone about a month.

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H. L. Horning, president, Waukesha Motor Co., Waukesha, Wis., has returned from a two months' business trip to the British Isles and Continental Europe.

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A. W. Schaefer, formerly associated with the Pittsburgh Forgings Co., has recently become affiliated with the Crosby Co., Buffalo, maker of sheet metal stampings, as district representative in the territory comprising western Pennsylvania, eastern Ohio and West Virginia, with offices at Pittsburgh.

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H. Birchard Taylor, Philadelphia, has been elected president of the Diesel Engine Manufacturers association, succeeding George W. Codrington, of the Winton Engine Co., Cleveland, now chairman of the board. E. T. Fishwick, Worthington Pump & Machinery Corp., New York, continues chairman of the executive committee.

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Harry F. Devens, Pittsburgh, president of the Oliver Iron & Steel Corp., and previously vice president of this corporation in charge of its Morris & Bailey division, and prior to that with the Superior Steel Corp., has been elected a director of the Brainard Steel Corp., Warren, O., to fill the vacancy caused by the death of D. J. McLaughlin. E. T. Sproull is president of the Brainard corporation.

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Burton J. Henning, formerly assistant sales manager of the Seneca Iron & Steel Co., Buffalo, has recently been appointed sales manager, succeeding W. F. Stahl, who has resigned. Mr. Henning has been affiliated in various departments of the Seneca company, having been connected with this institution for the past nine years.

Here and There In Industry

MANNING, MAXWELL & MOORE INC., 100 East Forty-second street, New York, has bought the business of the Box Crane & Hoist Corp., Philadelphia, and will merge it with the Shaw Electric Crane Co., a subsidiary, at the Shaw plant at Muskegon, Mich. The division will be known as the Shaw-Box Crane & Hoist Co. The purchase does not include the land and buildings at Philadelphia. The purpose in acquiring the Box company is to broaden the line of cranes and hoists produced by the Shaw division. The latter has built heavy hoisting units from 5 to 250 tons, specializing in cranes for railways, steel mills, and other heavy-duty purposes. The Box company has been building hand cranes, jib and pillar cranes, powerhouse and ice cranes and hoists, from 500 pounds to 20 tons capacity. It appears the merger will give 80 per cent new engineering and only 20 per cent duplication. Box Crane & Hoist Corp. was founded in 1878. The sale was occasioned by the death recently of Herman L. Winterer, former president and principal owner. Frank J. Winterer is president and general manager and Joseph H. Winterer is secretary of the Box company.

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Midvale Co., Philadelphia, Pa., has moved its Chicago district office from the McCormick building to 627 Railway Exchange building. John R. Heckman is district sales manager.

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Service Station Equipment Co., Conshohocken, Pa., has closed the plant of its subsidiary, Bennett Pumps Corp., Muskegon, Mich., and will concentrate production at its main plant at Conshohocken. It is planned to reopen the Muskegon plant when conditions make it desirable.

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Timken Steel & Tube Co., Canton, O., has appointed Edgar T. Ward's Sons Co. exclusive distributor of Timken mechanical seamless steel tubing for the central states, through warehouses in Cleveland, Detroit, Chicago and Milwaukee. Stocks will be carried at each of these centers.

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National Radiator Corp., with main offices and a plant at Johnstown, Pa., and plants at Framingham, Mass., Dunkirk and North Tonowanda, N. Y., Trenton, N. J., and Chicago, has passed to the control of its bondholders. Receivers sold the corporation's properties at Newcastle, Pa., Aug. 8, to a reorganization committee controlled by bondholders. Reorganization will be effected through an exchange of securities.

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E. J. Lavino & Co., Philadelphia, ores, refractories and pig iron, is planning to consolidate some of its departments at Philadelphia with its Pittsburgh office, fifth floor Oliver building. The change will become effective about Sept. 1 and will involve larger quarters in Pittsburgh.

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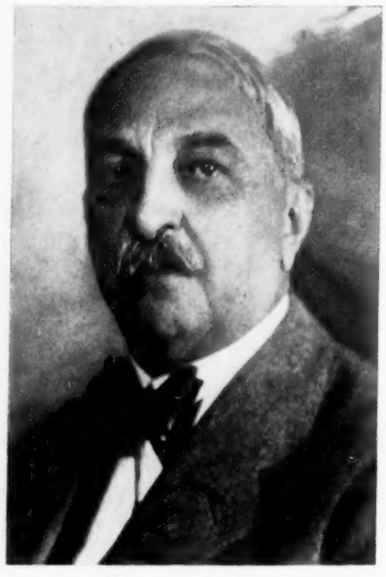
Deep Sea Export & Import Co. Inc., 73 Pearl street, New York, has been organized to succeed Arkell & Douglas Inc., New York, for 90 years engaged in the export business, which was liquidated in May. Employes who had been associated with Arkell & Douglas formed the new company.



Philip A. Myers

C. E. Steinmetz is president, S. E. Vallette vice president and secretary, C. W. Kauffman treasurer, and R. Moore assistant secretary.

The firm of Arkell & Douglas was founded by James Arkell of Toronto, Ont., and Montreal, Que., about 90 years ago. In 1848 or 1849 Mr. Arkell moved to New York, his firm handling vessels and cargoes for all parts of the world. In 1870, William Harris Douglas entered the firm, whose name was changed in 1884 to Arkell & Douglass.

The new firm of Deep Sea Export & Import Co. will be represented in foreign fields by those who formerly represented Arkell & Douglas.

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Union Spring & Mfg. Co., New Kensington, Pa., through Leonard G. Woods, president, has purchased 520 acres between Freeport road and the Allegheny river, at Pittsburgh. Purchase is reported to be private and there are no immediate plans for building or development, according to Mr. Woods.

Obituaries

PHILIP A. MYERS, president of the F. E. Myers & Bro. Co., Ashland, O., manufacturer of pumps, died at Cleveland, Aug. 5, following injuries received in an automobile accident near Ashland, May 30. When a boy he invented a new type of pump which interested his older brother, F. E. Myers, then selling pumps, and while still very young he directed the manufacture of his invention. He found time also to develop a bent for invention, especially relating to farm equipment.

Following the death of his brother several years ago, Mr. Myers took over full control of the company. In addition to his interest in industry he gave large sums for philanthropic purposes, especially benefiting Ashland. Supplementing the personal direction of his own company, he was first vice president of the Faultless Rubber Co., president of the Chase Foundry & Mfg. Co., Columbus, O., a director and vice president of the First National Bank of Ashland, a director of the Union Trust Co., Cleveland, and a trustee of Ashland college. He was 79.

While Mr. Myers retained the presidency of the F. E. Myers & Bro. Co., in later years his son Guy and his nephew John Myers assumed greater responsibility for executive details.

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Robert C. Becker, affiliated with the New York office of the Crucible Steel Co. of America, died at Asbury Park, N. J., recently.

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Julius Goslin, president of the Goslin-Birmingham Mfg. Co., Birmingham, Ala., with offices in New York the past two years, died recently.

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Robert H. Sproat, 48, superintendent of the American Steel & Wire Co.'s American Works, at Cleveland, died Aug. 9. He was associated with the company since he was 16.

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Edwin B. Hendrie, 85, who joined the Hendrie & Bolthoff Mfg. & Supply Co., Denver, in 1880, and became president in 1891, died at his home in Denver, July 15. His older brother, Charles F. Hendrie, founded the firm, retiring in 1907. In 1884 a small block of stock was assigned to Edwin B. Hendrie by his brother to be paid for out of dividends. This policy was followed by Edwin B. Hendrie and Mr. Bolthoff with other employes. In 1917 Edwin B. Hendrie, then the largest stockholder, sold 90 per cent of his holdings to minority stockholders.

MIRRORS OF MOTORDOM

DETROIT

AUTOMOBILE manufacturers are facing a very real problem in the matter of costs — a problem being brought home now to their supply interests as estimates for 1933 models, to be put in production in October and November by most companies, are figured.

More fortunate than most, the automobile industry has held its base prices. True, several producers have cut deeply and Ford moved the low-price market down a notch, but if the factory sales prices of 20 typical cars be averaged and compared with 1929, the decline is negligible. So far as the automobile buyer is concerned, the industry still is on a 1929 basis.

Meanwhile, the industry has benefited from the sharp reductions in the cost of steel and other materials. It made few basic changes in design a year ago, effecting great economies in dies, and the gadgets which it added and has been emphasizing cost comparatively little. Credit losses have been small because the industry is virtually on a cash basis.

But, the rub is that the 1929 prices which have held over for today were set for volume, something the industry has not had for over two years. They were predicated upon production of 5,000,000 and more units annually, whereas 1932 will do well to reach 1,500,000. One authority estimates the overhead on every car dropping off the assembly lines today is triple that of 1929.

Color, Trim Options Hurt

No automobile manufacturer is immune from this situation, not even Ford. When the present models were brought out March 31 it was stated that the prices were formulated upon volume, and it was generally understood that a daily production of about 5000 units, 5 days a week, was the minimum required for Mr. Ford to break even. The best schedule yet attained has been slightly over 4200 units daily, and the current output is about 2500.

A poignant cause for concern are the extravagant options offered buyers in the way of body and wheel colors and upholstery trim. Not only were 1929 prices figured on the basis of real volume but they also were figured on straight line assembly. Now, due to options, a surprisingly large percentage of cars must be taken off the line for special attention. In other words, buyers are getting custom jobs at standard prices.

25,000 Combinations Possible

The line of one important manufacturer includes two sizes of engines mounted in three wheelbases, with a number of types of bodies for each wheelbase. Wood artillery or steel spoke wheels are optional. Almost any color body and wheels and type of interior trim are available. It has been figured that almost 25,000 separate combinations of these options and sizes can be worked out.

There is another manufacturer who maintains a running, daily inventory of all cars in the stocks of its dealers in the United States. Recently an order was received for an unusual combination of color of body and wheels and interior trim. In stock that day were between 375 and 400 cars meeting the specification in all but one or two apparently minor details, but without question a car was taken off the assembly line and handled specially.

The result is that as manufacturers compile costs for the new 1933 models they are using a new yardstick for production. Volume is a word rarely heard. Intensified pressure upon material prices is one result. One engineer maintains that 1933 jobs will be noteworthy for what is taken off, not put on.

As previously reported, Ford has closed for the last half of August, going down Aug. 12 at least until Sept. 6, or after Labor day. This will certainly put August production by the industry below 100,000 units, almost down to the level of November, and will handicap September.

For July, the estimate of the National Automobile Chamber of Commerce is 112,600 units, including about 6000 by Canada. From June this was an unexpectedly large decline of 41 per cent from the 190,204 units officially reported for that month. Compared with July, 1931, the drop was 49 per cent.

July thus was the poorest production month of 1932, whereas the industry did not expect to fall below the 117,000 to 119,000 average for January-March. For the United States only, passenger car and truck output has been: November, 68,867; December, 121,541; January, 119,344; February, 117,418; March, 118,959; April, 148,326; May, 184,284; June, 184,284; July (estimated), 106,000.

At practically all plants except Hudson-Essex, where the Essex terraplane is supplying impetus, the flow of production continues out. Ford is now about 2500 daily, 5 days a week, on the eight and practically no fours. Chevrolet is on the basis of a 20,000 month. Hudson has improved a little on last week's schedule of 400 terraplanes a day, 4 days a week. For most makers, current production represents shipments from stock.

Report Dies for New Ford

Detroit continues to harvest a bumper crop of Ford rumors. Recently it was reported that a longer wheelbase was contemplated for the eight, and now it is understood that Briggs is making new dies for a larger body. The difficulties in casting the V-8 engine in one piece admittedly are enormous. Offsetting one report that a straight eight would be substituted is a rumor that a two-piece block is being designed.

EDITORIAL

Need Policy on Service for Steel House Market

TWO houses of unusual construction are being built in the outskirts of Cleveland. That the choice of materials and the methods of fabrication and erection are considered worthy of special attention is evidenced by the fact that manufacturers, architects, contractors, bankers, social workers, building and loan association representatives, insurance company officials and others from many distant cities are studying these buildings carefully. Interested engineers from Japan and from European countries have investigated the new construction.

The reason for this widespread interest is readily apparent to those who have examined the residences. The one in South Euclid, O., is distinctive chiefly in that the walls consist of sheet steel-celotex-sheet steel panels fastened to a steel frame, with enameled steel shingles nailed to the steel-celotex boards for the exterior. Enameled steel shingles on wooden roof boards serve for the roof.

The house at Solon, O., is distinctive in that it has no frame. Steel sheets bent longitudinally into "S" or "Z" form are delivered to the site. For the floors the Z-shaped sheets are laid side by side with the metal overlapping an inch (or more for increased strength) at the top and bottom flanges. The overlapping metal is tacked at intervals of about one foot by electric welding. The result is a continuous floor of box girders, having unusual strength for its weight.

Houses Are Step in Application of Steel to Residence Construction

The walls are of S-shaped sheets tacked together at the overlap. Steel clad celotex sheets, similar to the material on the South Euclid house, are fastened to the outside of the walls. Enameled steel shingles will be used for the outside covering.

Many minor details of these structures are unusual. Doors with crank-operated windows and screens as in automobiles; a small panel at the corner of wall and ceiling which serves the dual purpose of a brace and a carrier for conduits, pipe, etc.; unusually large window frames of steel; the use of screw-type nails for certain fastenings; the clip and nail feature of the enameled steel shingles; and many other innovations are worthy of study.

No one—not even the enthusiastic sponsors of these houses—believes that they represent the last word in steel construction. Like the hundreds of steel frame residences that have preceded them, they represent pioneering in the now wide-wake effort to adapt steel to small house construction. Out of the ambitious activities of numerous architects, builders, manufacturers and fabricators to find the answer to the steel house problem will be evolved a simple, practical construction that will endure.

Of equal importance to the question of what material or materials and what methods of fabrication and erection will prove ultimately to be most suitable, is the problem of casting the role of principals in this new branch of the building industry. Will the steel producer serve his interests best by acting simply as a seller of steel, or should he also engage in fabrication, warehousing and other phases of distribution? How will independent fabricators, contract welding companies, steel jobbers, contractors, architects, and others fit into the picture?

Policies of Fabrication and Distribution Are Important Factors in Development

These are questions of policy that are fully as important as the technical and engineering problems involved in steel house construction. They deserve early attention because the success or failure of the entire idea of steel for residences depends in a large measure on the ability of the sponsors of this type of construction to give satisfactory service to home owners. No matter how fine a steel house may be developed, it will not be successful generally unless the facilities for furnishing, fabricating and erecting the material are equal, if not superior, to the facilities now available for building houses of conventional design and construction.

From the limited experience gained thus far it would seem that the best results will be obtained by working through the established architects and building contractors. Many of them already have evidenced surprising eagerness to undertake steel construction and to adapt their resources to its peculiar problems. Also it may prove more desirable for steel producers to work through local fabricators than to undertake the fabrication themselves. Whether or not established companies or others are best fitted to do the fabricating still is an open question. Possibly a new industry of specialists may be required for this service.

The possibilities are so far reaching that every interested industrial concern should study its relation to this new development. It is not too early to take the steel house problem seriously.

THE BUSINESS TREND

Industrial Activity Lags Behind Sentiment

ACTUAL rate of activity in the steel and allied industries has not changed appreciably thus far in August. Newspaper reports of men being called back to work in many instances refer to resumption of plants that have been down since the July 4 holiday. In cases where long idle works have opened, the gain is offset by curtailment in other establishments.

However, while the metalworking industry has not yet profited from the more favorable conditions brought about by easier credit, government loans and rising commodity prices, there has been a slight gain in activity in a few industries. The ceramic group—glass, enamel and pottery—is definitely on a higher plane and at a time of year when a rise is not normally expected. An upturn in leather and shoes has been apparent since early in July. The textile industry also reports increased mill operations, a larger volume of sales and firmer prices. The late improvement in the agricultural outlook seems to be holding well.

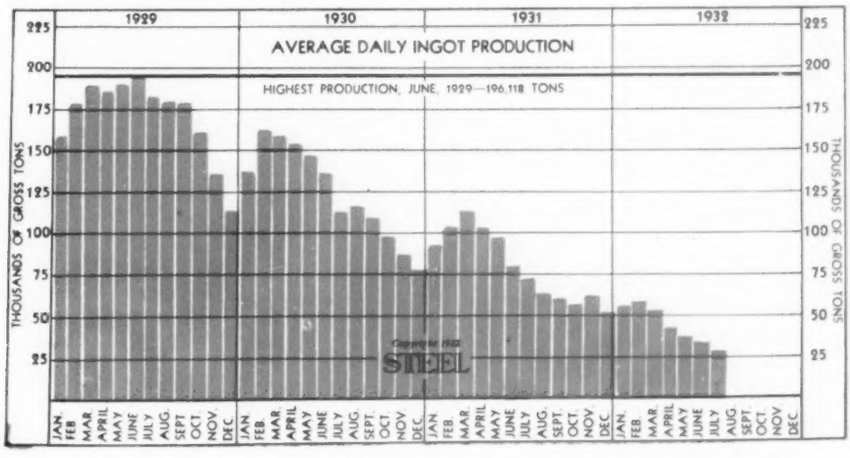
This quickening of the pulse of industry, together with the action of the stock and bond markets, has had a profound effect on business sentiment. While the volume of trading in the stock market and the rapid rise in security values still are viewed with caution in many quarters, they have contributed to returning confidence. The gains in the value of stocks and bonds, aside from speculative features, should soon be reflected in buying power.

Commodity prices are furnishing strong support for the wave of improved confidence. Most of the recent gains in prices have held and in addition the number of commodities sharing in the increases has grown. The late strength in nonferrous metals and in steel scrap is indicative of the spread of rising commodity prices from agricultural products to other important groups.

Groundwork for Reconstruction Is Sounder Than in First Quarter of 1931

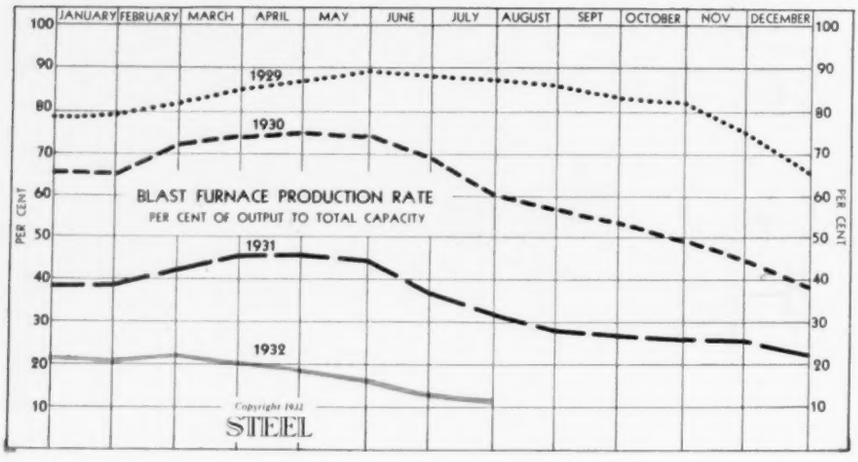
Little change in the rate of steelmaking operations is expected before September. Pig iron and steel ingot output for August seems destined to fall below that of July. Carloadings still are unimpressive. Electric power output slipped back after several weeks of small gains. Weekly reports of banking and currency, however, are distinctly more encouraging.

Industrial activity has improved only slightly, but indications for an early upturn are more definite than at any time since the short-lived rise in the first quarter of 1931. However, today the foundation for recovery is much sounder than was the basis for that ill-fated spurt.



1932	Tons
July	31,701
June	34,511
May	42,540
April	47,625

1931	Tons
July	72,599
June	81,837
May	98,140
April	106,421



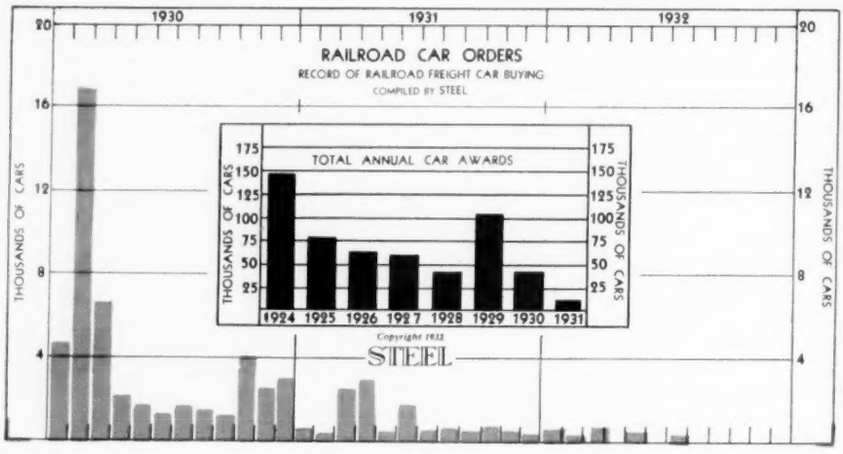
	1932	1931
July	13.0	32.7
June	14.7	37.9
May	17.9	44.7

Blast Furnace Operations Off With Only 46 Active Stacks

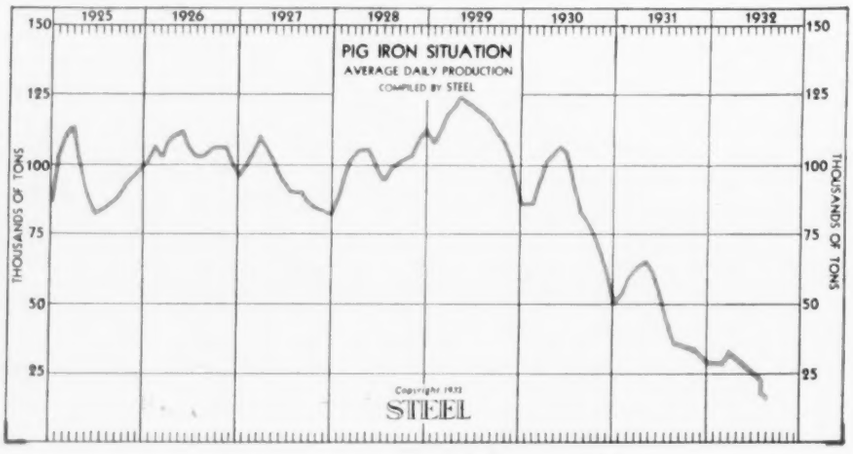
The decline of 11.8 per cent in the daily rate of pig iron production brought a further reduction in blast furnace activity during July. The operating rate for July was 13.0 per cent compared to 14.7 per cent in June. For July, 1931, the rate stood at 32.7 per cent. During the month, six furnaces were blown in and seven were banked. Active furnaces on the last day of the month totaled 46 as compared with 47 on June 30.

Freight Car Awards Remain At Low Level in July

Awards for domestic freight cars in July totaled 25 cars, a feeble recovery from the zero mark made in June, and a negligible number when compared to the 617 orders placed July, 1931. During the seven months of this year, bookings have aggregated only 384 cars compared with 6661 for the same period last year. Builders are awaiting results of a conference between the Reconstruction Finance Corp. and railroad executives relative to loans for repairs and new equipment.



	1932	1931
July	25	617
June	0	1,910
May	60	20



	1932	1931
July	18,394	47,170
June	20,867	54,599
May	25,282	64,355

Daily Rate of Pig Iron Output Declines 11.8 Per Cent

With an average daily rate of 18,934 tons in July, pig iron production was 11.8 per cent less than the 20,867-ton rate of June. The rate for July, 1931, was 47,170 tons per day. This is the third consecutive month in which new all-time lows have been made and it estimated that the July rate was the lowest since November, 1896. Total production of iron in July was 570,222 gross tons, a loss of 8.9 per cent from the 626,015 tons of June.

USING a 2500-pound steam hammer to type a forging die. The master type consists of two mating blocks, one mounted on the anvil and the other on the hammer head. A die steel billet heated to 2100 degrees Fahr. is shown in place on the lower block. When hammered, this billet assumes the shape of the cavities in the blocks

TYPED FORGING DIES HAVE LONGER LIFE AND COST LESS TO MAKE

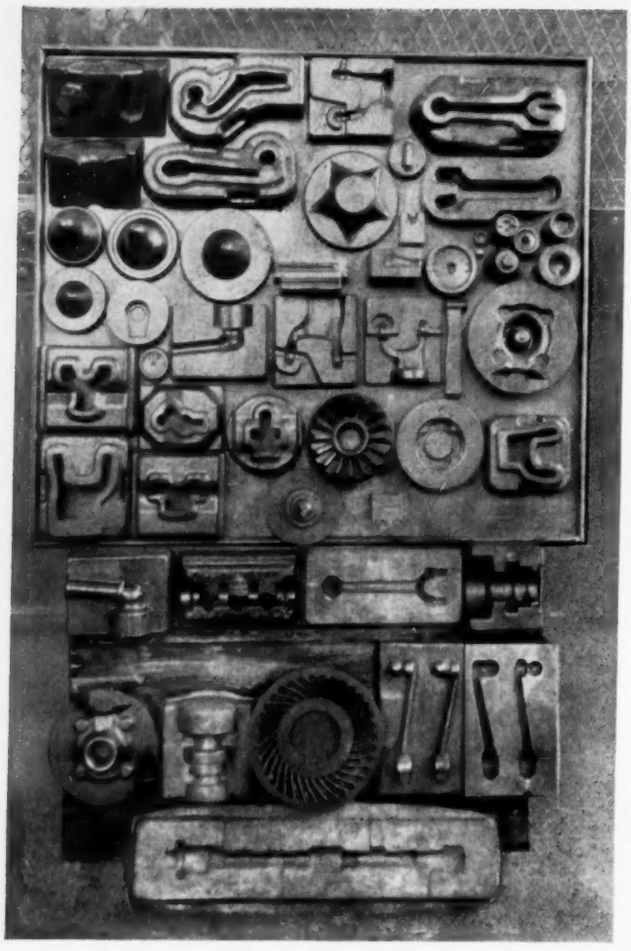
BY E. F. ROSS
Associate Editor, STEEL

LIGHT hammer and press forging dies, trimming dies and dies for molding plastics such as steering wheels, now are made by the Ford Motor Co. by a new method known as die typing. Thereby, this manufacturer of low-priced automobiles has been able to reduce die cost to a fraction of what it was formerly. The dies are not only more economical to make, but experience shows that they produce about 25 per cent more forgings, as compared with dies turned out by the usual die sinking practice.

The typing process has been under development of the company's engineers for about three years, but only during the past 18 months has its technique been perfected to the point where its application to production work is extensive. Die sinking is laborious and costly and in an automobile plant using thousands of dies the expense is a considerable item. Through the new method, the production of dies has been increased many fold and the staff of skilled die makers has been greatly reduced.

Briefly, the process in its simplest form con-

Examples of forging, trimming and upset dies produced by the typing process. A master type for the front axle spindle bearing is shown at the extreme left and next to it two typed forging dies. Fourth from the left is a typed trimming die for front spindle forgings. A master type for the rear axle housing flange is at the extreme right and a typed forging die next to it



THIS illustration shows a large variety of typed forging and trimming dies, also some of the master types used in their making. Some of the larger dies, for example the camshaft forging die at the bottom, are built up by typing several inserts and fastening them into recesses in large blocks either by driving them in with tapered fits or shrinking them in with heat

sists of driving a hardened master type into a heated die block of steel just as an impression is made in wax. The master type is made by butting a die block with projections of the same shape as the impression required in the die but larger by an amount equal to the shrinkage of the typed die when it cools and the shrinkage of the forging when it cools.

The types are cut by a toolmaker from regular die block steel used for hammers, having the following composition: Carbon, 0.47 to 0.55; manganese, 0.50 to 0.60; chromium, 0.60 to 0.75; nickel, 1.50 to 1.75; and silicon, 0.10 to 0.20 per cent. Sulphur and phosphorus must both be less than 0.03 per cent.

Several Dies in One Set-up

For dies of a relatively small size, the master type is mounted on the ram of a press of 90 tons capacity. The die block, of customary die steel and of suitable size, is heated in a lead pot to a temperature of 1700 degrees Fahr., set into a retaining ring and placed on the press under the master type. When the press is tripped, the type is impressed into the die block. Several dies, therefore, can be made quickly in one set-up.

A slightly different procedure is followed in producing such dies as the star punch for the gasoline gage nut. In this case, the master type consists of a ring with a star impression worked into the center just enough larger than the punch required to allow for shrinkage. The master is placed on the bottom of the press, the steel blank heated in the lead pot and placed upside down on the master type. The press has a flat upper head and when tripped drives the blank into the master die.

A variation of the typing process is used in making larger dies, Ajax dies and trimming dies. For this work a 2500-pound steam hammer is used and the master type consists of two mating blocks, one mounted on the anvil and the other on the hammer head, as shown in an accompanying illustration. The lower block has machined in it a smooth-bottomed cavity the depth of which is equal to approximately half the thickness of the die to be made. The hammer block on the ram is machined with a similar cavity except that the desired shape is engraved or embossed in the bottom of the cavity.

Avoid Trapped Gasses

A billet of die steel of proper size to fill the cavities in the hammer blocks when struck is heated to a temperature of 2100 degrees Fahr. and placed between the blocks. When hammered this billet is made to assume the shape of the cavities and therefore to flow the metal completely around the master type, filling in corners or small projections. Entrapped gases may retard a complete flow of metal around the master and to eliminate this difficulty small holes frequently are drilled in the master type into which these gases may be compressed. The same exactness is required in heating the billets to proper temperature as is required in heating the die blocks for the smaller typed dies.

Each master type is made to allow for a definite shrinkage and if the temperature is permitted to vary, the dies produced will be of incorrect size. Die blocks for Ajax machines are made from straight 3.5 per cent chromium steel containing carbon from 0.60 to 0.75 per cent; manganese from 0.30 to 0.40 per cent; and silicon from 0.10 to 0.20 per cent.

Trimming dies are typed with facility and are made in a manner similar to that just described. The master pierces the correct opening after which the bottoms of the blocks are squared and the cutting edges filed to templet before the hardening operation. These dies are so accurate that only a minimum of filing is required.

Scaling of the die steel must be prevented, therefore, the smaller blocks are heated in a lead pot; larger blocks are heated in a furnace

SIXTH of a series of articles describing metalworking processes used by the Ford Motor Co. in building its new V-8 and Model B automobiles. This installment deals with die typing, a rapid and economical procedure developed by the company for making its forging, trimming and molding dies, all of which are required in large numbers. Previous articles were devoted to welding, forging, heat treating and pickling methods; the first appearing in the June 6 issue of STEEL, the second in the June 20 issue, the third in the July 4 issue, the fourth in the July 18 issue and the fifth in the Aug. 1 issue.

with controlled atmosphere to protect them from oxidizing gases. Scale on the surface of the die block can not be tolerated because it would be impressed into the surface and result in unwanted depressions. Cavities or projections in the dies are finished to exact shape in the typing operation and no machining is permitted to prepare the dies for use. After typing it is necesary only to square up the bottom and sides of the block to make it fit the tapered holder.

The blocks or billets have their top sides ground to remove any decarburized metal which may have occurred in rolling or forging. In furnace heating, the blocks are placed on the hearth and at once covered with sodium chloride or common salt. When the block comes up to heat and reaches 1450 degrees Fahr., the salt melts but a protective film remains on the hot surface even up to the forging temperature of 2100 degrees Fahr. This film, which provides complete protection against the furnace gases and air, is removed easily by scraping it off just before the typing operations. After being typed, the surface is protected during cooling by a layer of fine charcoal or chips of cast iron.

Heating of the blocks must be precise because the shrinkage upon cooling is calculated in advance and is allowed for in the oversize of the master type. Any variation in temperature will produce a typed die inaccurate in its dimensions. With the exact technique which has been developed, no difficulty is experienced in maintaining an unusually close degree of accuracy. Typed dies are subjected to the usual die hardening treatment.

Typed Inserts Provided

Seldom is it necessary to make a forging die the full size and depth required for use on hammer or anvil. For the larger dies such as are used in making camshafts, connecting rods and other parts, the practice is to type inserts and to fasten these inserts to large blocks to make the complete die. This provides additional economy. These inserts are fastened into the larger blocks by frictional engagement, either by providing slightly tapered sides on the inserts and driving them into the block, or by expanding the block by heating to 850 degrees Fahr., driving the inserts into the cavity and allowing the block to contract upon cooling. When the latter method is employed, a shrinkage of 0.0025 inch per inch has been found satisfactory. The inserts have no chance to come loose in service.

The practice is to check these built-up blocks for growth in size after about ten dies have been typed from them. If they prove to be too large, they are heated and pressed back to shape, thus they have an indefinitely long life.

For car parts for which a large number of the same die is required, it was found necessary to replace the master type frequently. Therefore, the practice is to make the master types by typing. In this case, the practice is to make a master-master, or a master die which is used to type the master type, which in turn is used to type dies.

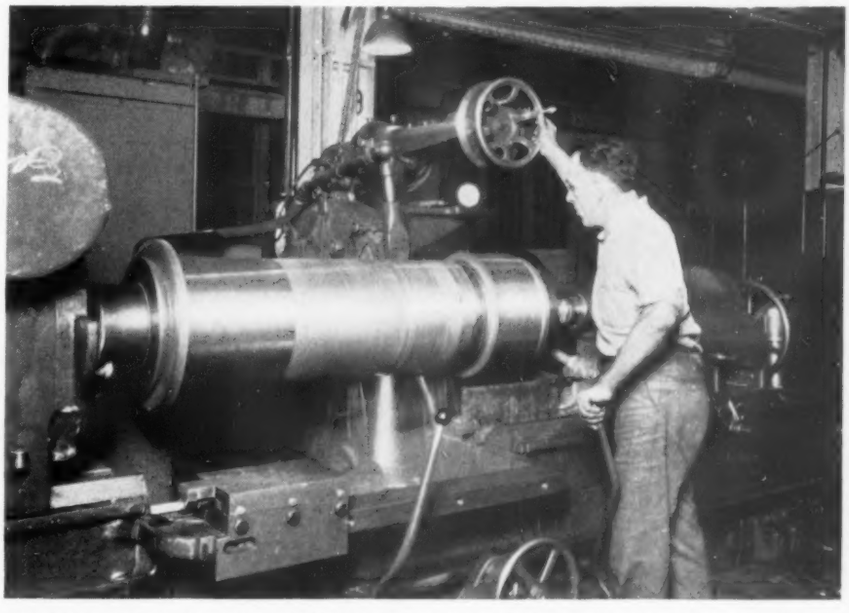
From the master-master a set of master hammer dies resembling the dies to be used in production are made and in them allowance is made for three shrinks. The first shrink takes place in making the master type, the second in making the forging die from the master type and the third in making the forging in the typed die. From the master hammer dies, approximately 500 good types can be produced and each type is capable of producing from 200 to 1000 typed dies, this depending upon intricacy of the dies.

Better Production Possible

As stated previously, experience in the Ford plant shows that typed dies produce about 25 per cent more forgings than cut dies. Typed and cut trimming dies show equal productivity. The explanation for the longer life appears to be in the fact that the surface of typed dies is more dense and the material has been made to flow to accomodate the die impression. In dies produced by the usual die sinking methods, the grains are not condensed and the ends of the fibers are cut and exposed in the impression. It is seldom that dies are discarded because of breakage, the usual defect being the development of slight warpage in the block.

Exhibit of Testing Equipment Planned

An exhibit of testing apparatus and related equipment will be held at Stevens hotel, Chicago, in 1933, in conjunction with the annual meeting of the American Society for Testing Materials, during the week June 26-30. Chief among the factors leading to this decision was the favorable reception accorded the first exhibit held by the society in 1931, together with the fact that an exhibit will attract a large number of engineers who will be attending various engineering society meetings during the week. In connection with the annual meeting it is announced that plans are being formulated for a general Engineers' day on Wednesday, June 28, during which a visit will be made to the Century of Progress exposition, followed by a formal dinner.



PRECISION GRINDING REQUIRED FOR LOCOMOTIVE QUILLS: Used in electric passenger locomotive service and finished in the plant of Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., these low-carbon forged steel quills weigh 695 pounds each. Steel is annealed and grain refined. Overall length of the quill is 60 inches, diameter of bearing journals 15 inches and the bore 13¼ inches. They are finished all over and the journals and gear fit are ground in a lathe with an emery grinding wheel to a tolerance of 0.003-inch. One quill is used for each axle on the locomotive. The quills do not transmit any power from the motors, but rotate in the quill bearings secured underneath the twin motors, and support the weight of the gear, taking the tangential thrust from the pinions and an additional load when the quills go eccentric. The motor pinion transmits the power to the gear and from the gear the torque is transmitted to the driving wheels through flexible drive units

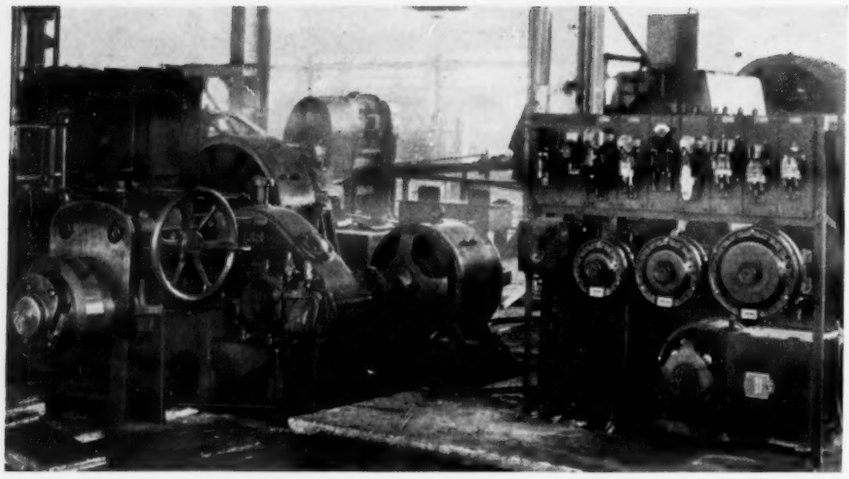


Fig. 1—Constant-tension drive for winding strip steel. Reel is shown at extreme left; control board at right with regulator underneath

Electric Drive Winds Strip Under Constant Ter..on

BY C. L. PETERSON
Reliance Electric & Engineering Co., Cleveland

AFTER rolling it is usually desirable to wind strip steel, brass, copper, etc., on a reel. Because of the change in the winding speed as a reel builds up, there is encountered a problem which has proved troublesome.

The operation of the reel is governed by two different types of speed. One is the rotational speed of the reel; the other is the linear speed of the strip being wound. If the rotational speed of the reel is held constant, the number of feet of strip which can be wound on the reel varies as the reel builds up. This varies directly with the diameter of the reel.

Strip is fed through the mill at a fairly constant rate. Consequently to keep it taut at all times between mill and reel, the linear winding speed of the reel must be kept constant. The pull on the strip always must be the same.

Wear on Clutch Is Severe

The usual method of accomplishing this has been to operate the reel by a motor or some prime moving force through a slipping clutch. When the reeling is first started, the reel operates at maximum speed with little slipping in the clutch. As the reel builds up, its rotational speed is lessened to keep the linear winding speed and tension fairly constant. The slipping in the clutch increases.

The slipping clutch must be watched closely at all times. It varies considerably; when first started it is cold and as it warms up through usage it changes, and thus varies the tension on the strip. Because of the continual wear it must be replaced frequently and maintenance is high. This is another reason why the clutch must be adjusted continually to keep the pull or tension constant.

A new constant-tension drive built by Reliance Electric & Engineering Co., Cleveland, eliminates the clutch. It works through the motor driving the reel, and this motor is automatically adjusted to give a constant pull.

The heart of the electric constant-tension drive is the regulator. The regulator armature has two windings, the "torque" winding and the "spring" winding. The torque winding is connected in series with the motor driving the reel, while the spring winding (so called because it acts in a direction opposite to the torque winding like a spring) receives its power from the main line. When the current in each of these windings is equal, there is no movement of the regulator. If the current in the torque winding increases or decreases, this means that the tension on the strip due to the reel motor has either increased or decreased. This causes a movement in the regulator and the rheostat which is coupled to the regulator shaft corrects the voltage to the reel motor to keep the torque constant.

Main Mill and Reel Synchronized

Though the regulator will take care of differences due to variation in reel diameter, it will not adjust the speed of the reel motor to suit the speed of the mill. In order to have the main mill and reel in step at all times, a simple scheme is employed. A generator called a "reel generator" is used to furnish the power for the reel motor. This generator is belted to the main drive. Slowing down the main drive causes the generator to produce a lower voltage and consequently the reel motor will slow down in proportion.

In rolling strip it is necessary to stop the mill and reel frequently in order to gage the metal. During such periods it is essential that tension be maintained on the strip so that the strip already coiled will not unwind. Obviously the main reel gen-

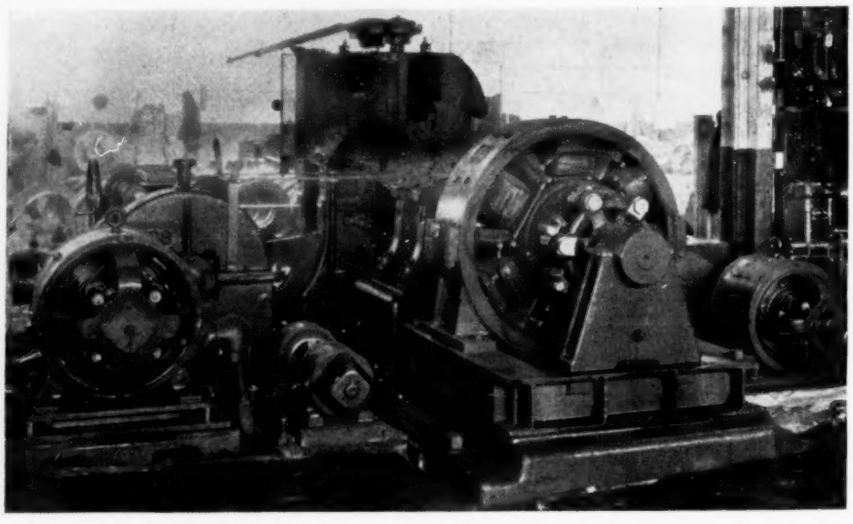
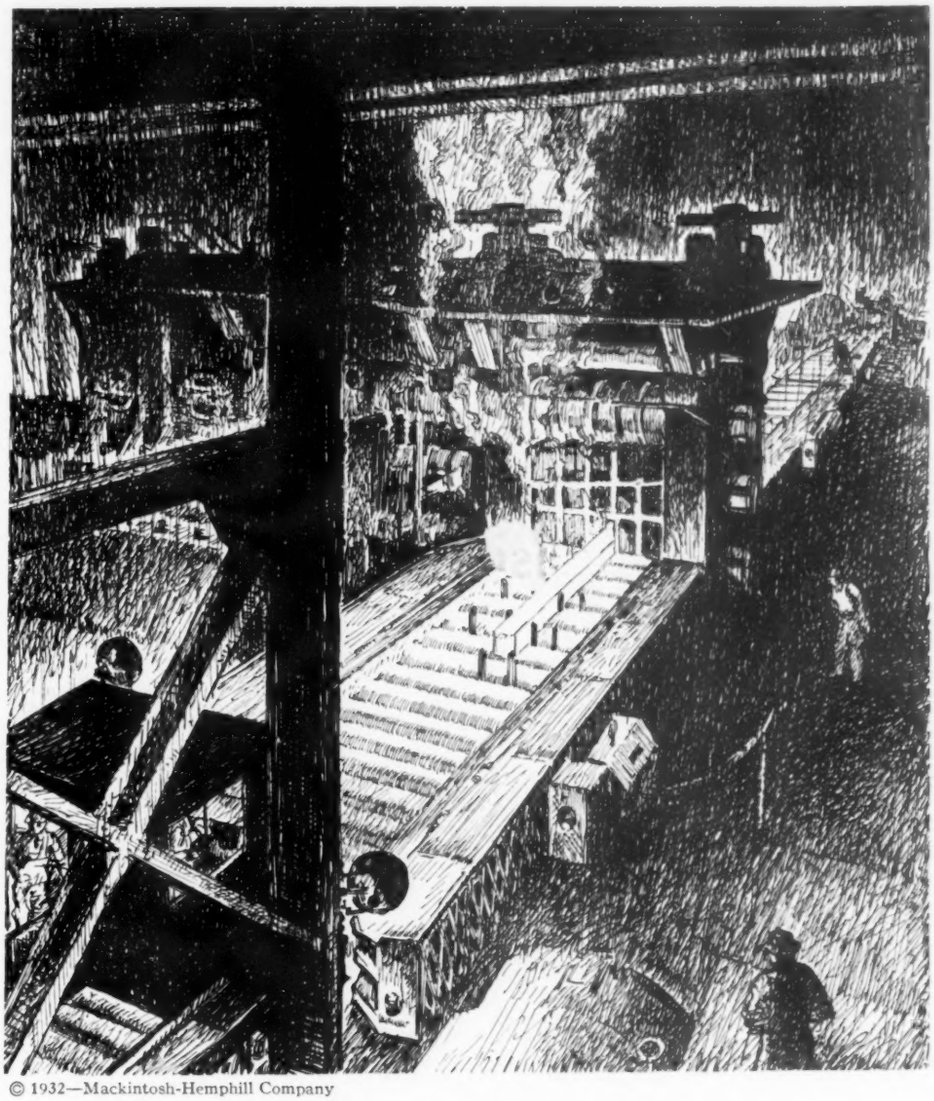


Fig. 2—Electrical elements of constant-tension drive system—from left to right, reel motor, booster set, main mill motor and reel generator



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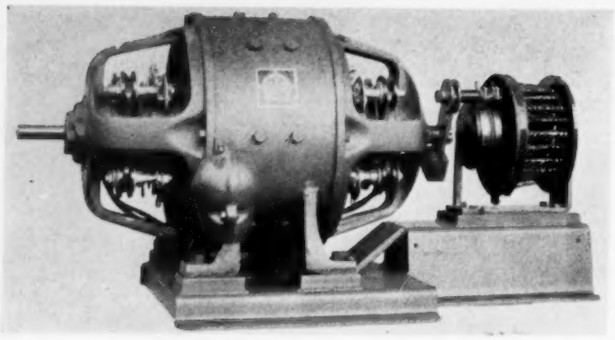

FIG. 3—Recently developed improved-type regulator providing close control of tension through rheostat coupled to shaft

erator cannot supply any power when the mill is stopped, since it too is stationary. Therefore, to supply just enough power to keep the strip taut, a booster motor-generator set is used. The armature of the booster generator is in series with the armatures of the reel motor and reel generator. The booster set supplies a low voltage and runs continuously whether the mill is operating or not.

Control Easy To Handle

Fig. 1 shows the constant-tension drive used for winding strip steel. The reel is at the extreme left and the control board is at right with regulator underneath. The control need not be touched except when the reel is being set for a different tension. By a simple adjustment any tension on the strip can be easily had over a considerable range. After it is once set, it will remain approximately constant.

The four main elements of the system are shown in Fig. 2. From left to right they are: Reel motor; booster set; main mill motor; and reel generator.

The constant-tension regulator illustrated in Fig. 3 is of the most up-to-date design. The rheostat coupled to the shaft at the right has a large number of points, making it possible to keep the tension unusually close.

The drive illustrated in Figs. 1 and 2, though one of the first, has been most successful. It has eliminated many delays and difficulties inherent in the slipping clutch mechanism. Results of this installation have been so favorable that a second unit recently has been erected in the same plant.

New Lubrication Theory Indicates That Metal Absorbs Layers of Oil

FACTUAL support of the theory of German investigators that lubricating properties of oil as such are not determined by the viscosity of the oil, and experimental proof of the correctness of Langmuir's theory under which a layer of lubricant one molecule thick is held by chemical forces at the face of a metal surface, as well as the theory of French investigators to the effect that a comparatively heavy layer of oil is held to the face of metal by electrical or magnetic fields, are offered by a new and startling theory of the mechanism of lubrication, an outgrowth of the work of the lubrication engineering committee of the American Society of Mechanical Engineers.

Development of the theory has been made possible through tests made on a new machine for investigating phenomena of lubrication, erected by the Sperry Gyroscope Co., Brooklyn, N. Y. With the new machine not only has the actual presence of layers of lubrication on metal been confirmed but the lubricant has been found to peel off layer after layer. Further it has been discovered that an "ultimate" layer is finally reached which does not peel off, even when enormous disruptive forces have been applied to it.

21 Layers Detected on Steel

Another startling discovery has been that if the ultimate layer is wiped off the face of the metal a new layer of lubricant is immediately created thereon and, for example, in the case of a steel lubricated surface, as many as 21 layers of oil have been wiped off where the presence of even a single fluid layer has never been suspected before.

With these and certain other facts as a foundation, a new picture of the mechanism of lubrication has been conceived. Briefly, a layer of oil is formed on the surface of the metal, the thickness and strength characteristics of this layer being determined by the character of the lubricant and the character of the metal. This layer, in turn, pumps up under an enormous pressure of oil into the crevices of the metal. In the course of contact with the bearing surfaces on the journal, the free film plays no part as a means of separating the surfaces of the metal. This is done by the newly discovered powerful adhering layers of lubricant and when these are wiped off, they are immediately restored by the oil ejected under high pressure from the crevices in and under the metal surfaces. The circumstance therefore is established that any lubrication is essentially high-pressure lubrication.

New Functions Ascertained

In the above mechanism of lubrication entirely new functions are ascribed to the free film of lubricant. Incidentally, tests on the new machine have given a basis for serious intimation that lubricants generally consist of two parts: One performing the functions of the lubricant and the other acting as a colloidal solvent thereto. It is thought, therefore, that if viscosity has any bearing on the lubricating properties of the oil, it is only the viscosity of the lubricating constituents of the lubricant and not the diluent constituent. Because of this, all present attempts to tie up the viscosity of lubricants with their lubricity are placed under suspicion.

The discussion of this new conception of the mechanism of lubrication was prepared for the lubrication engineering committee of the mechanical engineers organization by William F. Parish, chairman of the committee and formerly chief of the lubrication department of the air service, war department, and Leon Cammen, consulting engineer, New York.

Reports on High Temperature Study

FURTHER contributions to the literature on metals at high temperatures were made by the joint research committee of the American Society of Mechanical Engineers and the American Society for Testing Materials on effect of temperature on the properties of metals when it presented its annual report before the meeting of the latter society in Atlantic City in June.

Four research projects at co-operating laboratories relating to cast and wrought metals justified detailed reports. Studies of the 18 per cent chromium 8 per cent nickel steels included notch-bar impact tests and magnetic permeability tests under different conditions of

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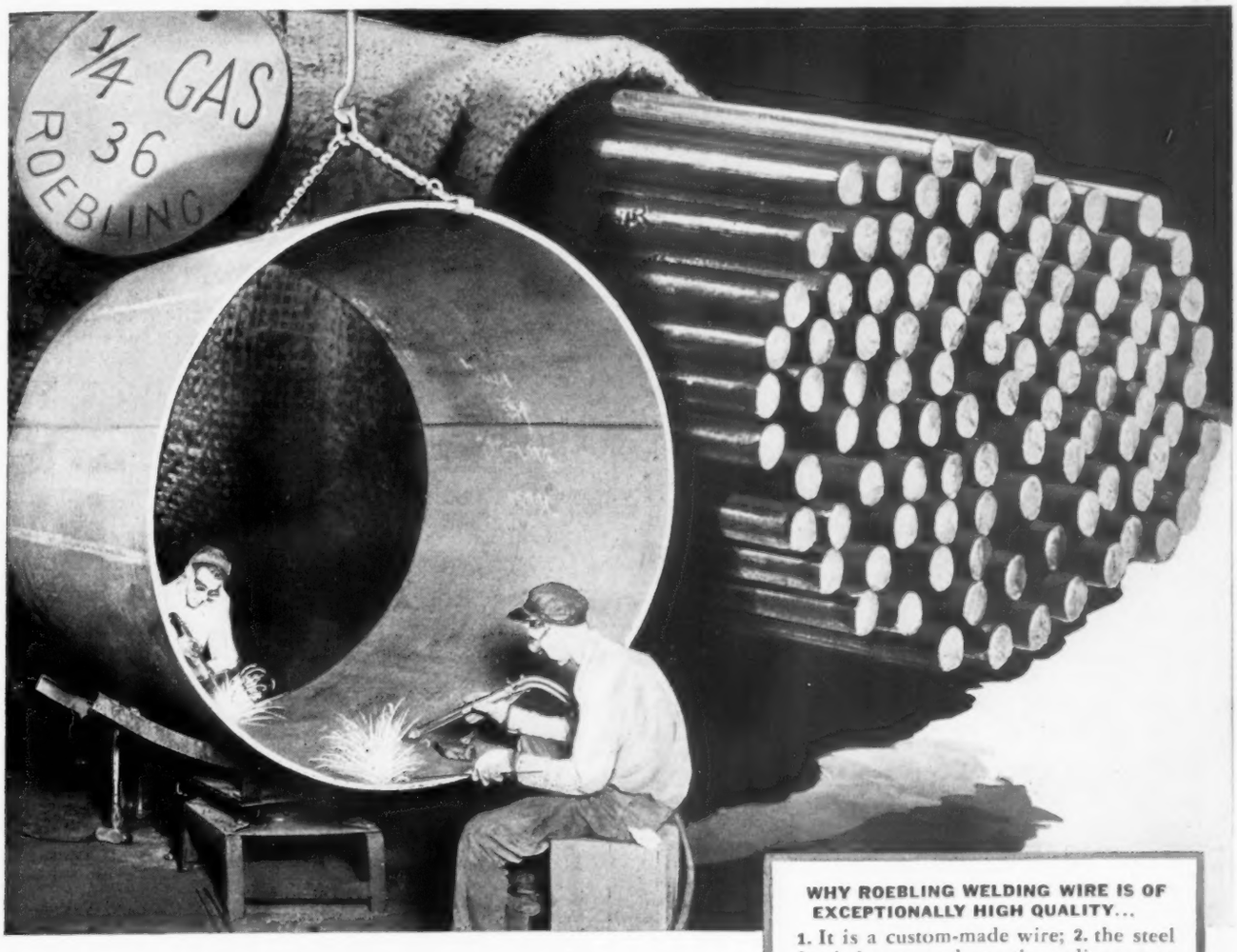

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treatment, in addition to an extensive study of the structural stability at elevated temperatures in the absence of stress.

The impact studies indicated appreciable embrittlement of the 18-8 steels with carbon content of 0.06 and 0.085 per cent is definitely produced after a 1000-hour draw at the temperature range 1000 to 1600 degrees Fahr., as revealed by the reduction of impact values in Charpy notched-bar tests. The impact tests presented other definite and significant results for the 18-8 steels, but it is evident that the data will have to be correlated with other types of tests before the full significance of the results will be shown.

A critical survey of the variations and variables in co-operative creep testing of a chromium-molybdenum steel was reported by H. W. Gillett and H. C. Cross, Battelle Memorial institute, Columbus, as one of the sponsored researches of the joint committee.

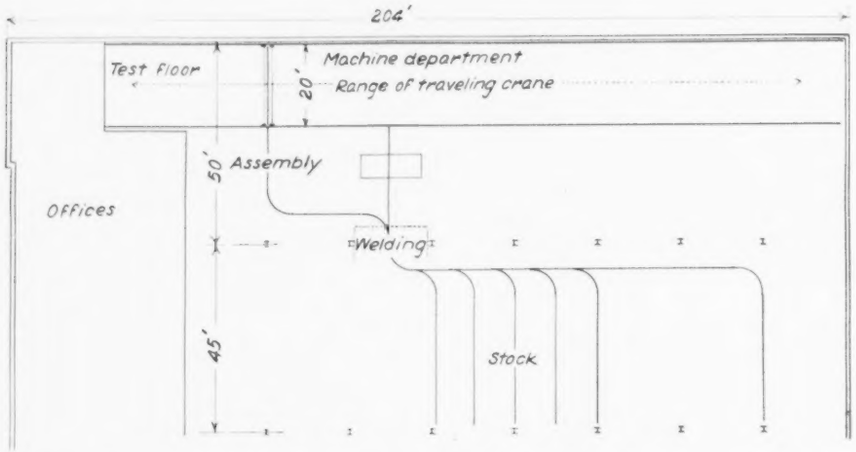
A correlation of tension, creep and fatigue properties of low-carbon (0.17 per cent) boiler steel at elevated temperature indicated that a design, based upon allowable deformation within the life of the material in service, will not result in a fatigue failure, but that further tests are necessary to establish this.

Welding Saves Time and Expense In Monorail Installation

UPON the occasion of installing material handling equipment, Wilson Welder & Metals Co., in a new plant at North Bergen, N. J., naturally turned to welding to do a quick and economical job. The company had the problem to devise a conveying system in order to have facilities to connect the assembly floor with the machine department, to carry work pieces to the welders and draw material from stock. The layout in the accompanying sketch shows how this has been accomplished. The traveling crane spans the machine department. Rails are laid on structural steel shapes attached to the roof girders by vertical struts which are welded both to the girders and rail supports.

The crane makes contact with a monorail system at two places, and switches are provided to reach each branch by any of the 1000-pound hoists operating on the monorail system. Supporting struts for the latter are welded to a 3 or 4-inch channel iron rail carrier and to girders above, or to all-welded brackets which in turn are welded to building columns. The section above the storage is suspended from the roof girders by flat iron supports which, being under tension only, are of small cross sections, and light flat strips are used at various angles to provide sufficient rigidity for the system.

By welding, the company has saved considerably in time, besides eliminating all driling into the building supports which would have weakened them to a certain extent.



Machine department is spanned by a traveling crane which connects at two points to a monorail system interconnecting assembly floor, welding department and stock

Chemists Schedule Papers On Metals and Coatings

The program for the eighty-fourth meeting of the American Chemical society to be held in Denver, Aug. 22-26, includes a symposium on "The Physical Chemistry of Metals," under sponsorship the society's division of physical and inorganic chemistry.

Among papers and speakers to be presented at this symposium are the following: "Thermodynamics of Metallic Solid Solutions," by A. Wachter, Johns Hopkins university, Baltimore; "Thermodynamics of Ore Reduction," by C. J. Maier, bureau of mines, Berkeley, Calif.; "X-Ray Analysis of Metals and Alloys," by G. L. Clark, University of Illinois, Urbana, Ill.; and "Some Applications of the Fundamental Theories of Metals and Alloys to Practical Manufacturing Problems," by Anson Hayes, American Rolling Mill Co., Middletown, O.

Two symposiums, one on "Industrial Coatings Related to Paint and Varnish," and the other on "Primers and Protective Coatings for Special Metals," will feature the meetings of the division of paint and varnish chemistry.

Zinc Caps for Rivet Heads

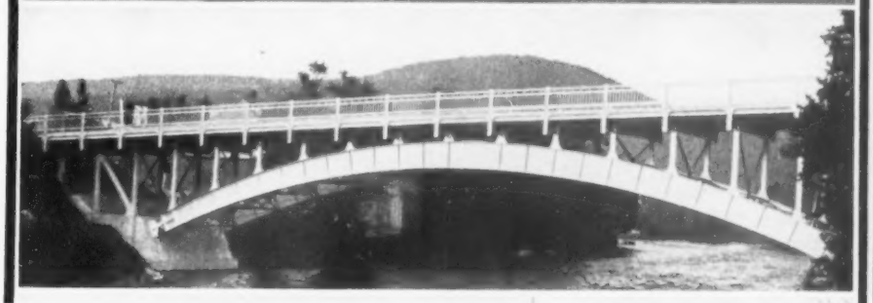
A NOVEL method of protecting rivet-heads from corrosion has recently been developed and patented by Singmaster & Breyer, engineers, Graybar building, New York, offering possibilities for new uses of hot-dipped galvanized structural steel. This steel has long been recognized as a most desirable material for the heavier types of steel construction, owing to the excellent weather-resisting properties afforded by the extremely heavy coating of zinc which such material always carries. These heavier structures are usually riveted together, and because of the difficulty of protecting the bare rivet-heads against corrosion, galvanized steel seldom has been used.

A method now has been provided, according to the American Zinc institute, New York, whereby the individual units of riveted steel structures may be hot-dip galvanized before assembling, joined together by riveting in the usual manner (using the ordinary uncoated rivets), and the exposed rivet-heads then sealed off from the weather after the entire job is assembled in the field. This method employs a circular flanged cap, formed from heavy-gage rolled zinc, which fits snugly over the rivet-head. This cap is fastened to the galvanized surface of the structural shape through which the rivet passes, by means of a continuous ring of solder, thus completely sealing off the rivet-head from the atmosphere. Application is by means of a gas or electrically heated, specially shaped

Above:
BAYONNE BRIDGE over Kill van Kull between Bayonne, N. J. and Staten Island, N. Y. (Class A Prize). Designed by O. H. Ammann, chief engineer for the Port of New York Authority.
Fabricated and erected for the Port Authority by the American Bridge Company.

Center:
WEST STEWARTSTOWN BRIDGE over Connecticut River at West Stewartstown, N. H. (Class C Prize). Designed by engineers of New Hampshire State Highway Department.
Fabricated for the State of New Hampshire by the American Bridge Company.

Below:
WALDO-HANCOCK BRIDGE over Penobscot River at Bucksport, Me. (Class B Prize). Designed by Robinson & Steinman, consulting engineers, New York City.
Fabricated and erected for the State of Maine by the American Bridge Company.



THREE AWARDS *for* BEAUTY, 1931

The three bridges here shown have been awarded respectively the Class A, Class B, and Class C prizes offered by the American Institute of Steel Construction for "the most beautiful bridge of steel" in each class, opened to traffic during the year 1931. The Class A prize is for bridges costing over $1,000,000, the Class B for bridges between $250,000 and $1,000,000, the Class C for bridges costing less than $250,000.

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soldering iron, so designed that the cap may be attached regardless of the position of the rivet. The caps are designed to fit various shapes and sizes of rivet-heads, with a heavy ring of solder already attached to the under side of the cap flange.

This method of preventing rivet corrosion opens up the possibility of using galvanized structural steel in the fabrication of bridges, towers, roof trusses, and many other steel structures exposed to the weather. It suggests an opportunity for widely increased use of structural steel in applications where permanence and freedom from maintenance expense are desired.

Steel Treaters Announce 27 Technical Papers for Buffalo Metal Congress

TWENTY-SEVEN technical papers, covering a wide range of metallurgical and heat treating subjects, are announced for presentation at the annual meeting of the American Society for Steel Treating to be held in Buffalo, Oct. 3-7 in conjunction with the Fourteenth National Metal congress and exposition.

Headquarters for the congress will be in Hotel Statler, while the exposition, in which more than 125 companies will show their products, will be housed in the 174th Regiment Armory.

Eight Groups Participate

Participating in the congress with the American Society for Steel Treating, the sponsoring organization, are eight other technical groups, including the American Welding society, Institute of Metals and Iron and Steel divisions of the American Institute of Mining Engineers, Iron and Steel and Machine Shop Practice divisions of the American Society of Mechanical Engineers, Production Activity division of the Society of Automotive Engineers, the Wire association, and the Drop Forging Institute.

The program for the American Welding society was presented on Page 28 of the Aug. 8 issue of STEEL; and that for the Machine Shop Practice division of the A. S. M. E. appears elsewhere on this page. Programs for the other groups will be announced shortly.

The list of papers and authors for the Steel Treaters is as follows:

"Corrosion Resistance of Iron-Chromium Alloys in Various Media—The Salt Spray Test," by W. B. Arness and J. N. Ostrofsky, Alloy Research Corp., Baltimore.

"Observations on the Effect of Normalizing Medium Manganese Steels on the Microstructure and Physical Properties," by C. R. Austin, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

"A Simple Cutting Tool for Measuring Pressures in the Direction of Cut," by O. W. Boston and C. E. Graus, University of Michigan, Ann Arbor, Mich.

"Factors Influencing the Annealing of Cold-Rolled Strip Steel," by G. R. Brophy and L. L. Wyman, General Electric Co., Schenectady, N. Y.

"Internal Friction in Iron and Iron Alloys," by Robert S. Canfield, United States Naval Research Laboratory, Anacostia, D. C.

"Design of Heat-Resisting Alloy Members and Their Performance in the Field," by Ralf C. Cochran, Surface Combustion Corp., Toledo, O.

"Further Experiments on the Forgeability of Steel," by O. W. Ellis, Ontario Research Foundation, Toronto, Ont.

"Some Molybdenum High-Speed Steels," by J. V. Emmons, Cleveland Twist Drill Co., Cleveland.

"The Role of Nickel in Nitriding Steels," by H. J. French, International Nickel Co. Inc., New York, and V. O. Homerberg, Massachusetts Institute of Technology, Cambridge, Mass.

"An Interpretation of the Deep Acid Etch Test as Applied to Tool Steels," by J. P. Gill and H. G. Johnstin, Vanadium Alloys Steel Co., Latrobe, Pa.

"Allotropy in Iron and Steel," by R. H. Harrington, General Electric Co., Schenectady, N. Y., and W. P. Wood, University of Michigan, Ann Arbor, Mich.

"Manufacture of Stainless Steels," by E. R. Johnson and Robert Sergeson, Republic Steel Corp., Massillon, O.

"Autographic Stress-Strain Curves of Deep-Drawing Sheets," by R. L. Kenyon and R. S. Burns, American Rolling Mill Co., Middletown, O.

"Development and Application of Macco-Etching," by H. G. Keshian, Chase Co.'s, Waterbury, Conn.

"Routine Disk Inspection in Quality Steel Manufacture," by G. V. Luerssen, Carpenter Steel Co., Reading, Pa.

"Lubrication of Deep-Drawn Sheet Metal Parts," by H. A. Montgomery, H. A. Montgomery Co., Detroit.

"Behavior of Steel in Sulphur-Containing Atmospheres at Forging Temperatures," by D. W. Murphy, University of Michigan, Ann Arbor, Mich.

"Transformation in the Carbide Phase During Graphitization," by H. A. Schwartz and C. H. Junge, National Malleable & Steel Castings Co., Cleveland, and Kent R. Van Horn, Aluminum Co. of America, Cleveland.

"The Hardening Transformation in Manganese Steels," by Howard Scott and J. G. Hoop, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

"Drop Forging Practice," by Adam Steever, Great Lakes Forge Co., Chicago.

"The Cobalt-Tungsten System," by W. P. Sykes, Cleveland Wire Works, General Electric Co., Cleveland.

"The Temperature-Atmosphere Problem in High-Speed Steel," by Sam Tour, Lucius Pitkin Inc., New York.

"Scaling of Steel at Heat Treating Temperatures," by C. Upthegrove and D. W. Murphy, University of Michigan, Ann Arbor, Mich.

"Heating Steel for Forging," by R. E. Waldron, Dominion Forge & Stamping Co., Walkerville, Ont., and N. L. Deuble, Republic Steel Corp., Massillon, O.

"Alloys of Iron, Manganese and Carbon," by Francis M. Walters, Carnegie Institute of Technology, Pittsburgh.

"Creep Characteristics of Metals at Elevated Temperatures," by A. E. White and C. L. Clark, University of Michigan, Ann Arbor, Mich.

"Preparation of Specimens for Deep Etching, Etching Reagents, Time and Temperature of Etching," by M. Yatsevitch, Watertown Arsenal, Watertown, Mass.

Machine Shop Group Will Conduct Three Sessions

The Machine Shop Practice division of the American Society of Mechanical Engineers has scheduled three sessions and a luncheon as its participation in the National Metal congress in Buffalo, Oct. 3-7. The activities of this group will be confined to Monday, Oct. 3.

The morning session is being arranged jointly with the Production Activity division of the Society of Automotive Engineers, the latter handling details of the program. Following this session, both groups will join in a luncheon at which equipment policies will be discussed.

Following is the detailed program as announced:

Monday, Oct.. 3

MORNING

Joint session with Production Activity division of Society of Automotive Engineers.

NOON

Joint luncheon with Society of Automotive Engineers. Discussion: "Adjusting Equipment Policies To Meet Changing Conditions," by Kenneth H. Condit, editor, *American Machinist*.

AFTERNOON

"Influence of Oil Compressibility on Speed Characteristics of Hydraulic High-Speed Presses," by Walter Ernst, development engineer, Hydraulic Press Mfg. Co., Mt. Gilead, O.

"Torque Required To Tap Cast Iron Using National Coarse Thread Series and National Fine Thread Series Taps," by J. E. Miller, Alden, Iowa.

"Recent Trends in Machine Tool Design," by Guy Hubbard, former associate editor of STEEL, Cleveland.

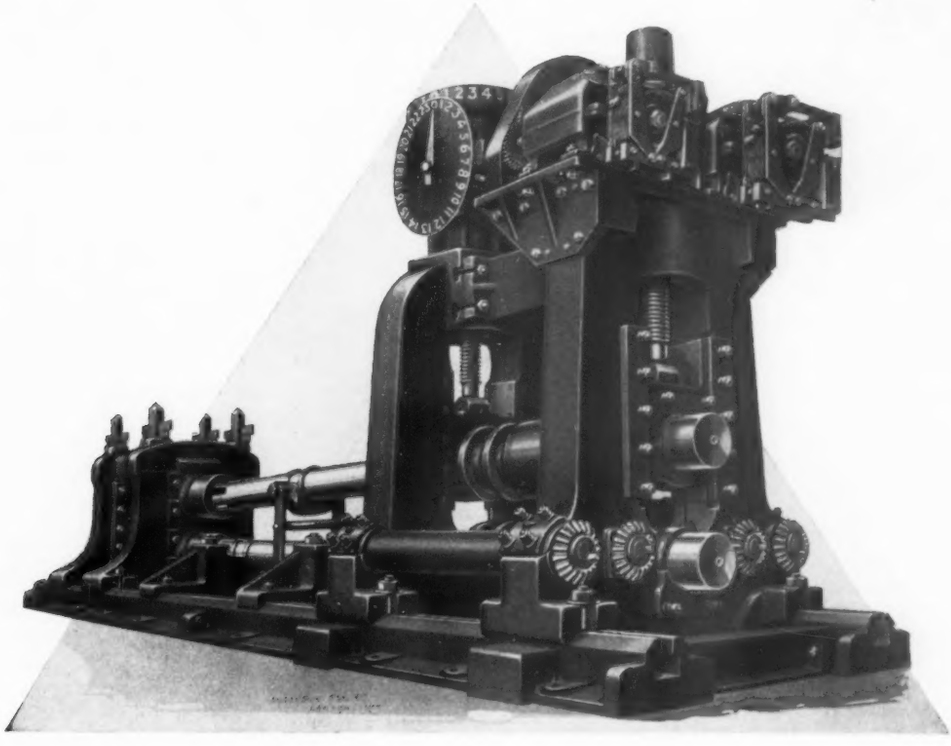
EVENING

"Technique of Size Control in Precision Grinding," by R. E. W. Harrison, former chief engineer, Cincinnati Grinders Co., Cincinnati.

"Design of Products To Utilize Die Castings of Machined Parts," by L. H. Morin, Doehler Die Casting Co., New York.

"Materials for Modern Cutting Tools," by J. V. Emmons, metallurgist, Cleveland Twist Drill Co., Cleveland.

"NATIONAL" ROLL



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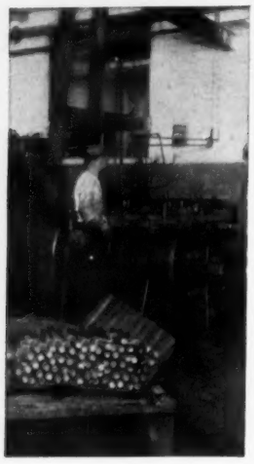
Making the Most of

METHODS AND MATERIALS



A NEW outlet for standard steel pipe is coming about through various customers formerly using mechanical tubing, specifying the former in various mechanical parts where it is found that the smooth finish of mechanical tubing is not an absolute requisite. Some of the automobile manufacturers have been taking the initiative in this move and are using butt-welded standard steel pipe in steering columns in place of mechanical tubing. There is some study being made at present on the possibilities of giving butt welded pipe one cold pass which would further liken some of its physical properties to mechanical tubing.

S S S

Some manufacturers of diesel engines and small steam turbines of late have reported increased sales of these units. This tendency is due to the fact that a good many companies are finding it cheaper to buy prime movers than to buy electrical energy from utility companies.

DIES for forming operations involving heavy impact can successfully utilize only a very thin chromium coating. Rolls for forming soft metal foils can well be chromium plated, but not for rolling steel. Chromium plating is useful on knives and saws for wood, rubber and the like, but not on metal cutting tools, while chromium plate is used on the piston pins of some automobiles, the brittleness of the deposit bars its use from most bearing surfaces, though deposition at higher temperatures may help. Plating the bores of 6-inch guns with 0.0004 inch of chromium increases life and accuracy.

S S S

Certain pump manufacturers of late have been installing stainless steel diaphragms in pumps working with acids. These diaphragms are made from stainless steel strip or sheet, usually 0.003 to 0.004-inch in gage, while in some cases the gage is as high as 0.006-inch. Formerly the diaphragms used in these pumps were thin tempered and polished plain carbon steel which did not always work out satisfactorily in contact with certain corrosive acids.

S S S

In producing steering knuckles for an automobile builder, a drop forging manufacturer was troubled with seam-like defects which showed up at the spindle end. In investigating the difficulty, carefully selected forging blanks free from defects were forged under various hammers in a variety of ways. The blanks, 2½ inches wide, 5 inches high and 5 inches long, gave the same defects even when stood on end with the length being the same as the width. It was concluded that the ratio of the height to the width was too great, therefore, the dimensions of the blank were changed to 3½ inches square and 5 inches high. This eliminated the trouble and at the same time did not increase the weight of the blanks or add to the cost.

S S S

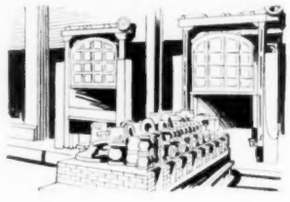
The X cross frame, which has been finding wide application in the automotive industry, has been adopted in the construction of road building and maintenance equipment by a Midwest producer.

S S S

Life of wire rope is materially reduced by idleness during shutdowns or slack-work periods. Even though there may appear to be sufficient lubrication and protection reaching the inside wires, unless there is motion or working to carry the lubricant to the working parts, there can not be complete lubrication; hence, parts not so protected become pitted from the action of corrosion. Unless the inside wires are thoroughly protected, this corrosion is likely to result in broken wires when load is again applied. A greater percentage of the estimated or expected rope life can be realized if wire rope equipment can be worked occasionally even though there may be no real work for the machine to do.

S S S

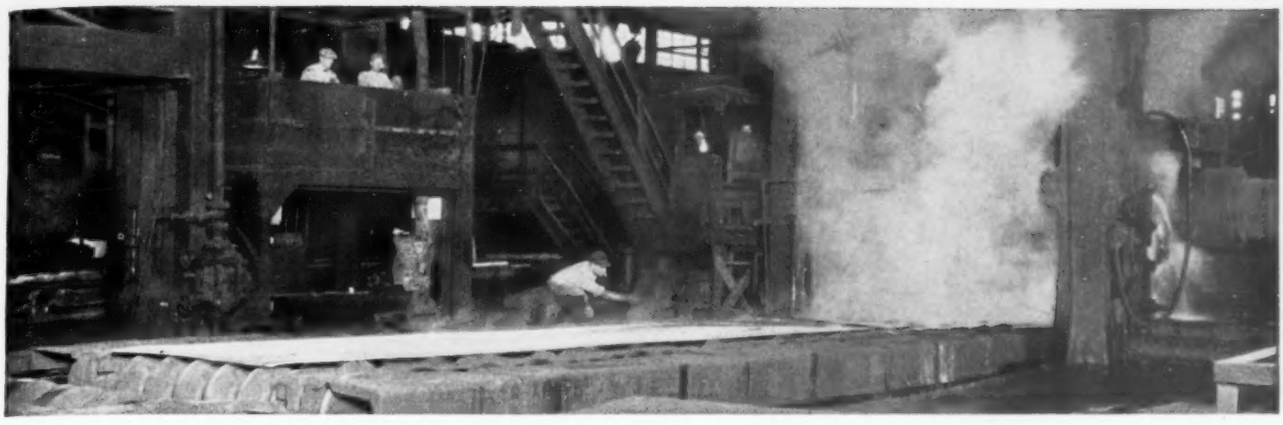
A company making gray iron dies for stamping steel uses 1.00 to 1.50 per cent molybdenum to increase die life. Another uses cast iron containing molybdenum for stoker grates, and it is said with excellent results. Several automobile companies are using brake drums of malleable iron containing from 0.20 to as high as 0.75 per cent molybdenum and results are showing in many instances an increase of 100 per cent in wear resistance.



A REDUCTION in time and cost of heat treating in addition to improvement in quality of work is reported by a producer of quality steel as a result of use in heating furnaces of vapor gas developed from fuel oil.

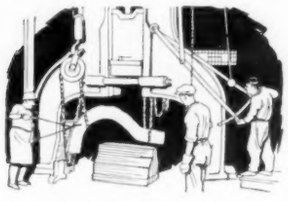
S S S

Recognizing certain distinct advantages and limitations in each type of rubber, soft and hard, for chemical service under conditions of variation in temperature, liability of shock, impact or gouging, and abrasive wear, engineers have produced a practical construction which successfully combines the two. A layer of hard rubber is cushioned between two layers of soft rubber, with suitably spaced overlapping expansion joints which effectively prevent cracking or buckling of the hard layer under expansion and contraction with temperature changes. This combination can be bonded to steel and certain other construction materials and finds its chief application in lining tanks and other process equipment in chemical and allied industries.



PROGRESS IN STEELMAKING

SELF-LOCKING worm and worm wheel actuating apparatus is incorporated in the design of a new automatic carrier for handling sheets, black plates and strip in hot mill and annealing departments. The hooks are controlled by power applied by the craneman and the mechanism latches automatically. The use of the motorized carrier at one plant has dispensed with the services of two crane followers.



SUBSTITUTION of compressed air for steam for the operation of forging hammers at a plant in the Pittsburgh district has effected a reduction of about 50 per cent in the cost of producing forgings. The changeover also has reduced fire cracking and breakage of dies as a result of the elimination of hot water dripping, has minimized packing ring costs and has obviated the need of idling the ram between forging operations.

♦ ♦ ♦

Nickel-clad plates with the thickness constituting 90 per cent of mild steel and 10 per cent nickel, now are being made free from oxide and with a bright finish. Heretofore, the nickel coating was covered with a layer of brown oxide which formed during the rolling of the composite metal at high temperature.

♦ ♦ ♦

Pipe now is being normalized continuously by a maker in this country at the rate of 100 tons an hour in maximum lengths of 47 feet and in outside diameters of 13½ inches. The hearth of the furnace is built with three zones for preheating, heating and soaking and the work is advanced by four reciprocating beams. The temperature-time cycle is controlled automatically, the heat treating cycle requiring about 30 minutes.

♦ ♦ ♦

Over-oxidation during the melting of open-hearth heats is greatly retarded by the use of pig iron containing from 1 to 1.30 per cent silicon according to an Ohio steelmaker. Practice at this plant also shows that iron with 2 per cent manganese increases the slag fluidity, assists in the removal of silicates and nonmetallic impurities and improves the quality of the steel.

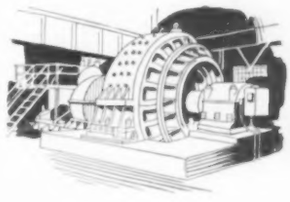
♦ ♦ ♦

Expensive permanent foundations are not required for a new type gyratory crusher recently designed for crushing slag, iron ore, limestone, ferroalloys and other steelworks materials. The machine driven by a direct-connected motor, is suspended by three cables which absorb much of the vibration and shock of crushing.

TO obtain efficient results when using graphite as a wash for ingot molds a product of amorphous nature, pulverized fine and containing less than 10 per cent ash to avoid inclusions, is more desirable than the flake or crystalline grade because of its adhesive quality, according to comments of a producer.

♦ ♦ ♦

Heating the galvanizing bath by the concurrent application of radiation, conduction and convection has minimized the fuel consumption and dross accumulation at an Ohio plant. Silicon carbide brick protect the firebox steel kettle from the direct action of the flame. The hot gases from the combustion chamber pass through multiple flues and heat the walls to incandescence, the heat being radiated to the sides of the kettle. One installation using this arrangement of firing has given a 4-year campaign without any kettle leakage or repair.



MOTORS driving the 30-inch roughing stands of a continuous mill in the Great Lakes district have been equipped with a novel system of ventilation. Each motor is provided with a steel plate cover. Air from the pit is forced into the motor at either side of the rotor, circulates through the machine and is discharged at the bottom of the stator frame through a separate duct into a surface-type air cooler. A motor-driven blower beneath the cooler returns the air to the motor, thus effecting continuous circulation.

♦ ♦ ♦

Wastage of fuel has been minimized at the plant of a western steel producer by the development of a new type gas burner which burns both blast furnace and natural gas in combination and in wide limits. The design of the burner obviates the necessity of premixing the air and gas, largely overcomes puffing or vibration of the flame at the burner tip and prolongs the life of the brickwork.

TESTED DAILY

IN THE HARDEST SERVICE ANY SHOP CAN GIVE

Visit the Midvale plant one of these days. Here you'll see big jobs and small. Here you'll see all types of steel, even tool steel itself, being cut—by Midvale Tool Steel. The tool bits the workmen are using come from the regular warehouse—it's the same tool steel you buy.

The Midvale shops have the same problems you have,—prompt delivery, low costs, good quick work—and no machine shop in the world has heavier work or more diversity of cutting problems, not another one gives high-speed steel as tough a test as does Midvale.

Consequently, Midvale Tool Steel *must* be the best these workers can get,—and it is. Your tool steel is just as important to you as Midvale's is to Midvale. Perhaps our experience would help you. Call us at any office: Philadelphia, New York, Washington, Pittsburgh, Cleveland, Chicago, San Francisco.

Midvale does not follow the "tonnage" method of tool steel production. Midvale charges with cold metal. Lets the ingots cool, to permit inspection for faults. Reheats ingots and reduces to billet size. Sand-blasts. Again inspects and chips when necessary. Reheats and rolls to finished size. This is the only method by which tool steel of Midvale quality can be produced.

MIDVALE

Scanning the Field of Technology

A Digest of Important Developments Pertaining to the Production, Processing, Application and Performance of Steel

Cobalt in Magnet and High-Speed Tool Steels

By James I. Hoffman, research paper No. 445 of the bureau of standards, Washington, 10 pp., 1 table.

A method for accurate determination of cobalt in steel is described in detail. Most of the iron is removed by extraction with ether; chromium, vanadium, etc., are eliminated by precipitation with sodium hydroxide and peroxide; the iron still remaining and the copper are precipitated by cupferron in a dilute hydrochloric acid solution, and the cobalt is precipitated in the filtrate by nitroso-naphthol.

Quantitative data are presented which show the amount of cobalt that remains with the iron in an ether extraction and in a precipitation of iron by cupferron. Copper, chromium, vanadium and tungsten are incompletely precipitated by the nitroso-naphthol. With the exception of a small part of the copper all of these are removed in the preliminary separations, and a method for the elimination of the slight interference of copper is given.

—STEEL, 8-15-32

Nitralloying Practice And Processes in England

By J. W. Urquart, in Heat Treating and Forging, July 1932, p. 409, 3½ pp., 1 illust., 2 tables.

Some account of what Great Britain is doing at present in the development of steels adapted to the application of nitriding should be of interest in this country. Four grades of alloy steel are in general use for this work at the present. Analysis of the first is: Carbon 0.20 to 0.26; silicon 0.35; manganese 0.65; sulphur and phosphorus 0.02; nickel 0.25; chromium 1.4 to 1.8; aluminum 0.9 to 1.3; and molybdenum 0.10 to 0.25 per cent. The other three are of similar analysis except for carbon contents which range 0.26 to 0.35, 0.35 to 0.45 and 0.45 to 0.55 per cent.

A recent development in the range of nitriding steels suitable for all purposes, where the core material is required to possess considerable hardness, has resulted in the production of a nitralloy steel that has the property of so-called age hardening. This means that, while under the influence of the long continued moderate heating of the nitriding process, the core material increases in hardness to a marked degree.

The regular or uniform distribution of the alloy carbides in a steel to be used for nitriding purposes is now considered to be an indispensable condition underlying successful results. Local precipitations, which might be increased by the long heating involved, would lead to weak spots in the nitrided case. For these reasons all nitriding steels are heat treated at the steelworks, this treatment including soaking at 900 degrees Cent., oil quenching and tempering.

—STEEL, 8-15-32

Induction Melting of Alloy Steels Described

By M. H. MacKusick, in Electrical World, July 30, 1932, p. 146, 4½ pp., 7 illusts., 1 table.

Theory of operation of the high-frequency induction melting furnace is sketched briefly and chacteristics of several types are cited. These details are largely familiar to those identified with the steel industry. A table lists analyses of 17 alloys which one company melts in this type of furnace.

Outlook for high-frequency melting is bright. Producers of high-grade special steels recognize the many advantages of this type of furnace. One plant is melting steel for the production of special shears and cutting tools, including razor blades, in the induction furnace. There are several installations for making high-speed steel ingots. The Army arsenal at Watertown, Mass., uses induction melted steel in the production of centrifugally cast guns. Many well equipped metallurgical laboratories use small induction furnaces for development and research work. The steel industry seems well pleased with this latest contribution of the electrical engineer to the advancement of its melting technique.

—STEEL, 8-15-32

Tests Show Temperature Variations in Furnaces

By Wirt S. Scott, in American Machinist, Aug. 3, 1932, p. 898, 4 pp., 6 illusts.

Extensive tests on a wide range of high grade and well maintained gas and electric heat treating furnaces have indicated that there must be many plants throughout the country which are laboring under a serious handicap and misapprehension as to the results actually being obtained with regard to temperature uniformity. If a variation of 200 degrees Fahr. within the charge is satisfactory then almost any type of furnace will do the job. If 100 degrees Fahr. is the maximum limit in variation in temperature then more careful consideration must be given to furnace construction.

The author states that with a properly designed electric furnace it is practical to obtain heat distribution throughout the entire charge of 10 degrees Fahr. plus or minus, from a given point. Once these conditions are attained they are fixed and unchanging, insofar as a uniform liberation of heat to the charge is concerned. An electric furnace can be made to operate with machine-like precision, producing results worth many times the investment charges and power costs, according to the author who is associated with one of the large electrical manufacturing interests.

—STEEL, 8-15-32

Denitriding in Salt Baths And Molten Aluminum

By H. H. Ashdown, in Machinery, August 1932, p. 921, 2½ pp., 6 illusts.

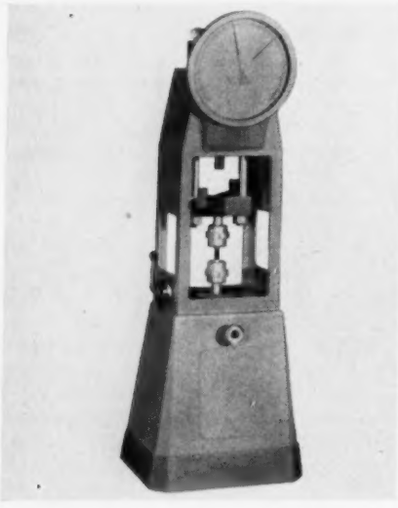
Although the term "denitriding" is used to denote softening of the nitrided case this expression is a misnomer. Observations have led the author to belive that high-temperature treatments of the nitrided case, either in a furnace or by means of salt baths, do not denitride the steel. The nitride needles still remain in the grain boundaries of the case; but at elevated temperatures a change in the state of the nitrogen combination may take place, resulting in a partial diffusion of the nitrides.

It has been found that by heating nitrided parts in aluminum powder up to the melting point of the powder (660 degrees Cent.), the aluminum fuses readily with the nitrided case, which then becomes comparatively easy to machine. By immersing nitrided parts in a molten bath of aluminum for a short period—a matter of minutes—the entire case may be fused away.

—STEEL, 8-15-32

NEW EQUIPMENT

PRODUCTION FABRICATION TREATMENT FINISHING



Riehle testing unit makes tension, compression and transverse tests

Unique Testing Machine Is Self-Contained Unit

Riehle Bros. Testing Machine Co., 1424 North Ninth street, Philadelphia, has placed on the market a new testing machine, which is unique in several respects. It is said to be the first machine in a low price range for testing a standard 0.505-inch test bar, being new in the respect that it is designed to operate from the sitting position. The dial is mounted at an angle to the vertical and is tilted forward so that it may be read conveniently from the sitting position.

In addition to pulling up to 150,000 pounds per square inch, the machine makes compression and transverse tests. The unit, shown above, was developed particularly for manufacturers who have been sending their work outside for tests.

◆

V-Groove Pulleys Formed From Heavy Gage Steel

Dayton Rubber Mfg. Co., Dayton, O., recently announced a new line of single and multiple V-groove pulleys for use with its cog-belts, for ratings of 7½ horsepower and below. These pulleys, shown herewith, are light in weight, making them highly suitable for machines requiring smaller horsepowers.

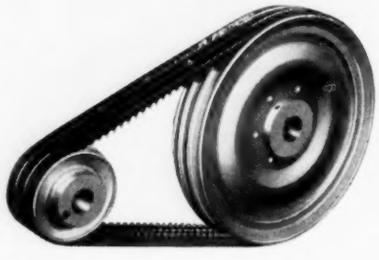
Accurately formed from heavy gage pressed steel for maximum strength, these pulleys are strongly welded both at the rim and at the web. They also are rigidly assembled with a hub of unique construction to give an accurately balanced and true running pulley of exceptional ruggedness and pleasing proportions. A high quality aluminum finish adds much to the appearance of the product.

◆

Superheater Is Simple and Compact in Design

Superheater Co., 60 East Forty-Second street, New York, recently introduced a superheater to meet the demand for a unit easy to install in horizontal return tubular boilers. It is compact and simple in construction, as shown in the accompanying illustration at the bottom of the page.

This new superheater comprises



V-groove pressed steel pulleys developed by Dayton Rubber Mfg. Co.

two cast steel headers, suspended one on each side of the boiler shell, which are connected by detachable tubular elements or units extending around the underside of the boiler. Headers are supported by adjustable clamped steel rods. By raising or lowering the headers, the units are correspondingly raised or lowered in the combustion chamber, which regulates the superheat or final temperature of the steam.

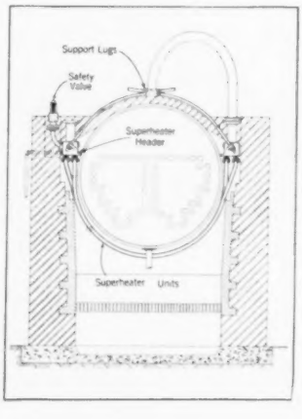
The superheater is automatic in operation. Saturated steam is carried from the boiler nozzle through a connecting pipe to one header, known as the saturated-steam header. From there it passes to the other header or superheated-steam header, through the units under the boiler, during which it is subjected to the relatively intense heat of the gases of combustion in the combustion chamber. The steam, then superheated, passes to the main steam line for use in the plant.

◆

Simplicity, Rigidity Feature Vibrating Screen

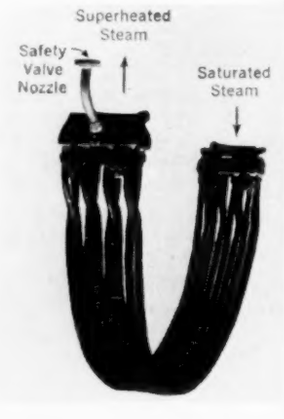
Stedman's Foundry & Machine Works, Aurora, Ind., has introduced a line of vibrating screens characterized by efficiency, simplicity of design, and rigidity of construction. The units, one of which is shown in the illustrations on page 38, are furnished complete with a ball bearing motor and roller chain drive completely encased in a dust-tight, oil-tight casing. Pushbutton control for the motor is mounted on the side of the screen frame.

Vibration is transferred to the screen tray which supports and carries the vibration to the wire cloth through four connecting rods, one end of each connecting rod being attached to either end of two revolving shafts which have ball bearing eccentrics. The other end of the connecting rod is attached to the shafts which support the screen tray.



Left—Typical installation of a horizontal return tubular superheater designed by the Superheater Co.

Right — Superheater unit consisting of cast steel headers, heavy gage steel tubing and safety valve, all supported from main boiler shell



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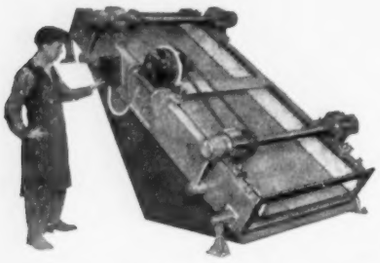
208 South La Salle Street, Chicago, Illinois



Stedman vibrating screen employs a roller chain drive

No springs are employed. The arrangement permits a large number of intensive vibrations—2600 each minute—with an unusually slow operating speed.

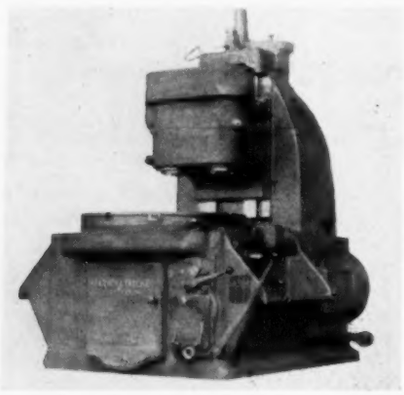
Two sizes are offered, the 46 which is 4 feet wide and 6 feet long, and the 48 which is 4 feet wide and 8 feet long. These screens are practical for handling large capacities and screening either fine or coarse.

◆

Designs Rotary-Type Vertical Milling Machine

Kearney & Trecker Corp., Milwaukee, has introduced a rotary-type vertical milling machine for high production manufacturing. Such operations as face, side and straddle milling, slotting, form cutting, and the finishing of radial faces are among the classes of work that can be handled on this machine, shown herewith.

An outstanding feature of the unit is the worm drive to the table which is 36 inches in diameter and is driven by a large, heavy wormwheel, almost equal in size. Table feed changes, of which there are 18, are by means of pickoff gears. Changes are made at the feed-change box conveniently located at the front of the machine next to the control levers. A table feed ratio of 40 to 1 is provided so that the full benefits of tungsten carbide may be gained even in cases where the cut is light in nature, or where the material being machined is soft, such as aluminum, where unusually fast feeds are desired.

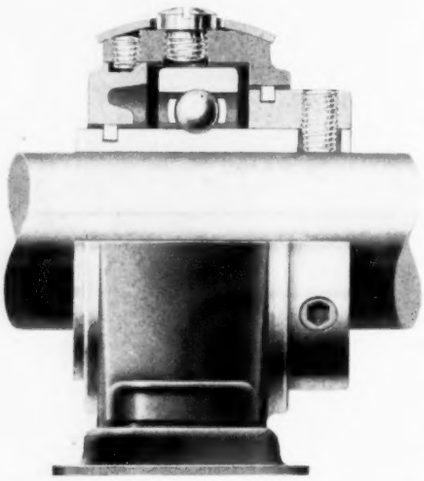


Kearney & Trecker rotary-type vertical milling machine

◆

Pillow Block Built with Formed Steel Housing

Dodge Mfg. Corp., Mishawaka, Ind., has developed a new type DH-1 pillow block which combines fine finish with light weight and rigidity. The unit, shown herewith, is built with a formed steel housing. Another feature is the use of automotive type piston ring grease seals. These provide positive protection against leakage of lubricant and admission of dust and dirt.



Pillow block is built with formed steel housing by Dodge Mfg. Corp.

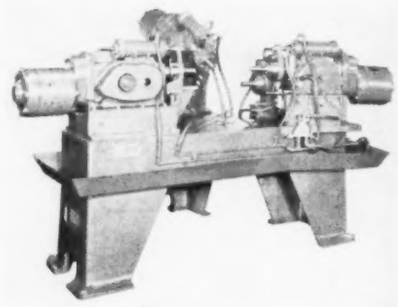
The inner housing of the pillow block is spherical on the outside, providing a self-aligning feature without sacrificing radial and thrust capacity of the bearing. A single row deep groove ball bearing is used. A set collar, fitted over the extended inner race, is provided with two set screws for clamping securely to the shaft.

Housing is of heavy gage steel formed to insure extreme rigidity and is of two-piece construction. This split feature facilitates installation or removal of the bearing.

◆

Unit Drills Angular Holes In Small Forgings

Millholland Corp., Indianapolis, has announced a four-way drilling machine for drilling angular holes in small forgings, to obtain extreme accuracy of location, and to eliminate straightening operation after drilling. The forging first is coined to set hole bosses in correct position. When placed in fixture bosses fit against pads which prevent springing when holes are drilled. A single air valve starts feeds on all drilling units simultaneously.



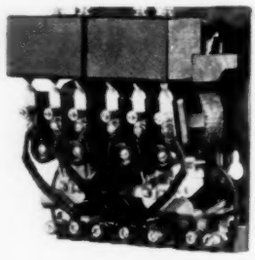
Four-way drilling machine manufactured by Millholland Corp.

Four automatic drilling units are employed and the mounting bases holding the drilling units are made to correct height and proper angle using a master locating block. Mounting bases are provided with fine pitch adjusting screws for tool setting, and nut can be quickly disengaged and entire unit withdrawn in slide by means of rack and pinion. This type of machine, shown herewith can be constructed for a number of different setups, and positions of drilling units on machine can be changed by relocating units on the bed, or by substitution of mounting bases of different height or angularity.

◆

Reversing Contactor Is Compact in Design

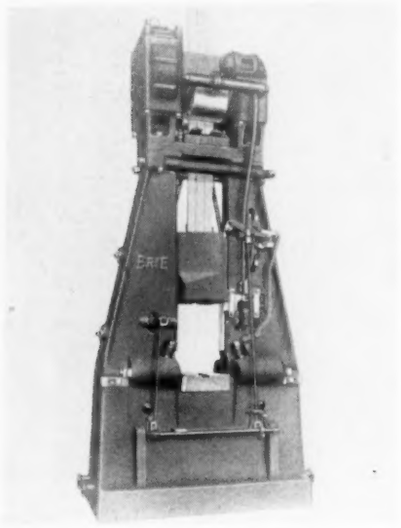
Industrial Controller division, Square D Co., Milwaukee, recently developed a three-pole reversing mag-



Contactor designed by Industrial Controller division of Square D

netic contactor interchangeable in rating and dimensions for alternating and direct currents. Maximum rating of the contactor, shown on page 38, is three horsepower. The compact design, relatively small dimensions and convenient wiring arrangement make it particularly adaptable for hoists, window and door control, dumb waiters, reversing machine tools and similar applications.

A positive mechanical interlock and magnetic safety latches to prevent accidental closing are provided. Design facilitates either two or three-wire control. The edgewise mounting of the movable contacts and the form of arc suppressors comprise a new principle for increasing the arc rupturing capacity. Contactors of this



Variable stroke board drop hammer marketed by Erie Foundry Co.

type are designated class 8711 for alternating current and class 7711 for direct current.

◆

New Design Increases Board Drop Hammer Speed

Erie Foundry Co., Erie, Pa., recently developed a variable stroke board drop hammer. In this design the length of the stroke is not adjusted in the conventional manner, but instead the operator has available either a light or heavy blow, a short or long stroke, and can choose either at will without delay.

The hammer is treadled in the usual manner with one foot, and the length of the stroke is governed by a slight rocking of the foot on the treadle which is, in effect, merely a shifting of the weight from toe to heel and vice versa.

The illustration directly above shows the variable construction applied to the type M motor-driven broad drop hammer manufactured by the company. It can be applied to existing hammers at a moderate expense, the company states.

◆

Manufactures New Keyway Milling Machine

Cincinnati Milling Machine Co., Marburg and South streets, Cincinnati, is manufacturing a keyway milling machine built from standard basic and semistandard hydromatic units. Keyways can be milled in shafts from 1 to 18 inches diameter. Straight section of keyway is milled by a slotting cutter, and at the same setting the ends are rounded out by an end mill in vertical spindle.

All controls including that for the table, spindle, infinite feed changes within the range, and rail assembly movements have been centralized at the normal operating position. Twelve speeds ranging from 90 to 810 revolutions per minute are available for vertical spindle, while horizontal spindle speeds range from 20 to 150 revolutions per minute. Higher speeds can be provided if desired.

The entire structure of the machine, shown herewith, is rigid yet extreme flexibility of adjustment and control is furnished. There is no overhang for horizontal arbor as it is supported by self-oiling aluminum arbor support. Two quick cam clamps are provided, one for clamping vertical carrier on rail and the other for clamping spindle in carrier.

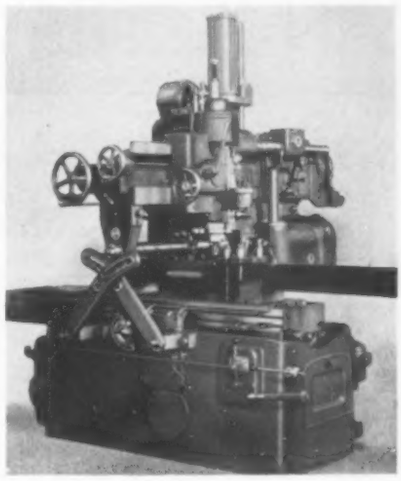
◆

Adds Welded Steel Double Crank Press to Line

Henry & Wright Mfg. Co., Hartford, Conn., recently added a welded steel overhanging double crank press to its line of equipment. This machine, shown at right, is inclined in a fixed position of 25 degrees from the vertical so that the large blanks, such as automobile running boards and similar parts produced in compound dies, would slide by gravity to a conveyor mounted at the rear.

A unique form of ribbing is employed in the frame in order to give maximum rigidity even under extremely eccentric loads. The crankshaft is made from a hammered alloy steel forging, heat treated and ground, and is mounted in bronze bushed bearings. The welded steel slide is guided in extra long ways, the pressure side of the latter being bronze lined, while the gibs are made of close grained alloy iron.

The welded gear has a high carbon



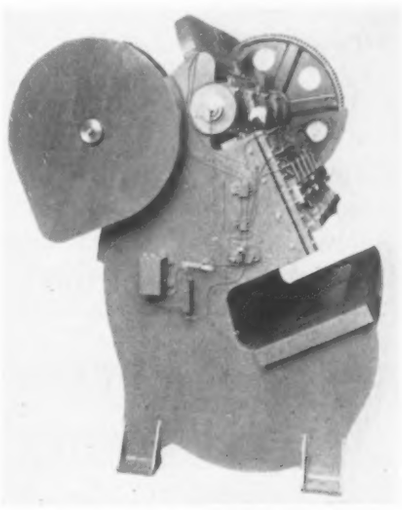
Keyway milling machine built by Cincinnati Milling Machine Co.

rim and is driven by a heat treated carbon steel forged pinion. Automatic pressure lubrication is supplied to all principal bearings.

◆

Metal Prime Coat Resists Scuffing, Chalking

E. F. Houghton & Co., Philadelphia, has developed a prime coat that gives a tough, hard, tenacious coating, not readily scuffed off by mechanical handling, and which will not chalk even after much exposure to the atmosphere. This new metal primer is made up of sublimed blue lead incorporated with a special type of vehicle. Due to the new process by which it is mixed with blue lead, the vehicle forms a film hard enough to protect the blue lead, yet elastic enough to take care of expansion and contraction.

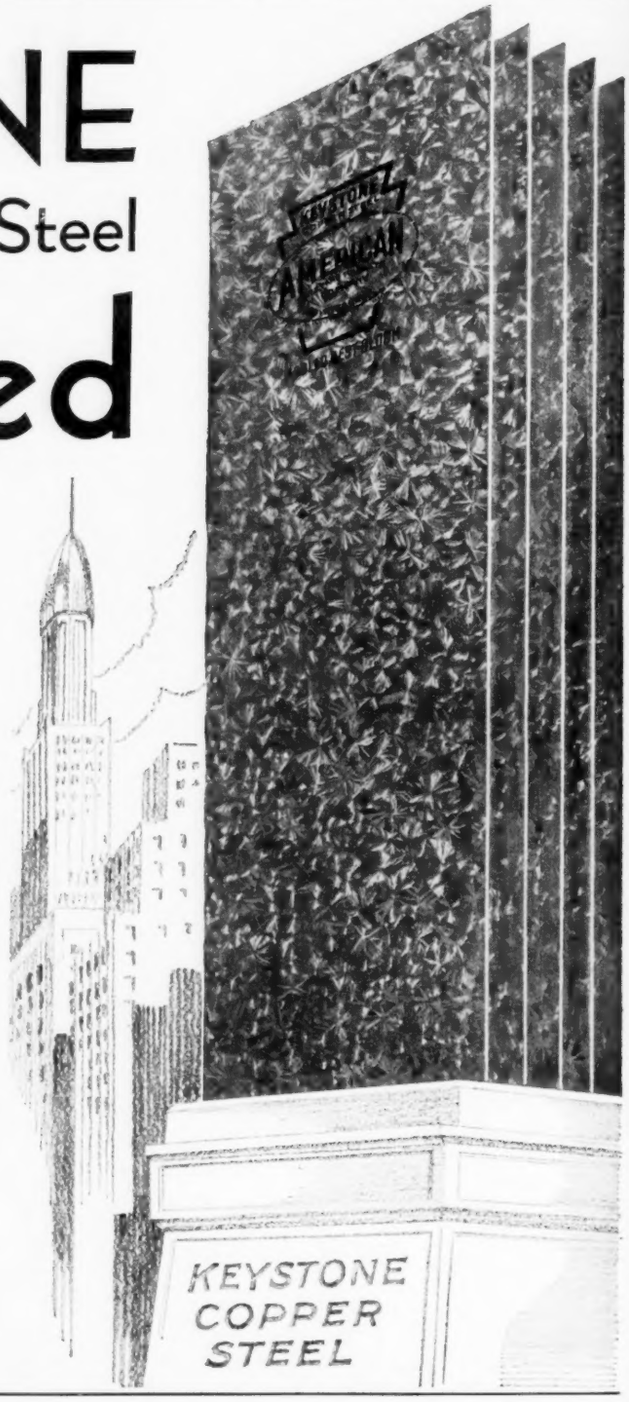


Henry & Wright welded steel overhanging double crank press

AMERICAN
SHEET AND TIN PLATE COMPANY
PITTSBURGH

AN ACHIEVEMENT IN ENDURANCE!

KEYSTONE
Rust Resisting Copper Steel
Galvanized Sheets



AMERICAN Apollo Best Bloom Galvanized has been long and favorably known—the recognized leader since 1884, because of its fine quality and splendid coating.

APOLLO-KEYSTONE Galvanized has been developed to offer an added measure of rust resistance by reason of the Copper Steel alloy base. KEYSTONE quality is a distinct achievement in endurance—and is unexcelled for construction uses, roofing and siding, and general sheet metal work; also for culverts, tanks and flumes.

This Company also manufactures AMERICAN Galvannealed, and "Seal of Quality" Heavy Coated Galvanized. Write us relative to your requirements for zinc coated sheets of every description.

U S STEEL

American Sheet and Tin Plate Company

GENERAL OFFICES: Frick Building, PITTSBURGH, PA.

SUBSIDIARY OF UNITED STATES STEEL CORPORATION

KEYSTONE COPPER STEEL AMERICAN

PRINCIPAL SUBSIDIARY MANUFACTURING COMPANIES:

AMERICAN BRIDGE COMPANY
AMERICAN SHEET AND TIN PLATE COMPANY
AMERICAN STEEL & WIRE COMPANY
CARNEGIE STEEL COMPANY
COLUMBIA STEEL COMPANY
CYCLONE FENCE COMPANY
FEDERAL SHIPBUILDING AND DRY DOCK COMPANY
ILLINOIS STEEL COMPANY
NATIONAL TUBE COMPANY
OIL WELL SUPPLY COMPANY
THE LORAIN STEEL COMPANY
TENNESSEE COAL, IRON & R.R. COMPANY
UNIVERSAL ATLAS CEMENT COMPANY

Pacific Coast Distributors—Columbia Steel Company, San Francisco, Calif.
Export Distributors—United States Steel Products Company, New York, N. Y.

Demand for Raw Materials Appreciably Higher

Believe Rise in Pig Iron and Scrap Interest Foreshadows Gains In Finished Products—Prices Irregular—Erie Buys Fastenings

PIG iron and scrap are first to convert the recent improved sentiment in the iron and steel markets into tangible business, and with raw materials quickened the industry is encouraged to believe that finished products shortly will also receive impetus.

Sales of 9000 tons of iron at Cleveland and 7000 tons at Philadelphia accompany the best inquiry there since late 1931. Broader inquiry and better feeling are noted at Chicago, St. Louis, Boston, Buffalo and Toronto. One user of special iron at Philadelphia has covered a year ahead. Foundries casting railroad equipment are disposed to stock some iron at present prices.

Scrap prices are up 50 cents to $1.50 a ton in most districts, and as usual in a rising market the supply has vanished overnight, dealers holding for further advances. The second 50-cent increase at Chicago puts melting steel there at $5.50 to $6, a bid of $6 for shipment to Canada eliciting no takers. Dealers who took a recent order for steel at Pittsburgh at $8 covered at $8.25, the market is now quotable at $8.50 to $9, dealers are talking of a $10 market.

Except at Pittsburgh, where a slight expansion in orders for immediate rolling is reported, the finished steel lines continue to drag, but this lag of finished materials behind raw is not illogical. Resumption of a mill at South Chicago last week offset defections at Cleveland and Youngstown and held the steel operating rate at 14-15 per cent. Little change is indicated for this week.

What may be the forerunner of a better operating condition next month, however, is evident in the greater interest displayed in forward requirements. Particularly are small buyers sounding out the market and scanning the price situation, evidently to determine whether the time is propitious for accumulating a small inventory. This attitude is expected to produce improved though small releases by Sept. 15.

If the adage that prices are softest at the turn is solid fact, then the current weakness in some lines is not discouraging. Bars, plates and shapes are holding consistently, but sharp concessions are being made in sheets, tin and terne plate and strip. In most cases, mills dip under the market only for specific business. On sheets and terne plates definitely lower levels are quotable.

Awards totaling 13,805 tons, practically up to the weekly average for 1932, record another good week in structural steel. Inquiry is somewhat narrower, but is expected to pick up when relief funds are ready for distribution. The undercurrent that railroads will be in the market soon is strong. In the past week the only tangible railroad business was an Erie order for almost 1,000,000 each of track spikes and nut locks. Automotive requirements are in the dull period just preceding releases for new models. With Ford down at least until Sept. 6, or until after Labor day, August automobile production will be considerably below 100,000 units, or the lowest since last November.

Western municipalities are pressing the Reconstruction Finance Corp. for loans for waterworks construction, inasmuch as winter will soon close in and halt outdoor work.

Despite a lower German bid, a Pittsburgh mill has been awarded 290 tons of piling for Hoover dam. In the East pig iron from Holland is offered more freely and cheaply, resulting in an adjustment in the domestic market. These irregularities in pig iron and the aforementioned ones in sheets lower the iron and steel composite of STEEL 12 cents to $29.34 and drop the finished steel composite 20 cents to $47.51. The scrap composite, however, is boiling, and a rise of 16 cents to $6.16 makes a gain of 3½ per cent in two weeks.

Composite Market Averages

	Aug. 13	Aug. 6	One Month Ago July, 1932	Three Months Ago May, 1932	One Year Ago Aug., 1931	Ten Years Ago Aug., 1922
Iron and Steel Composite	$29.34	$29.46	$29.47	$29.62	$31.05	$39.79
Finished Steel Composite	47.51	47.71	47.71	47.62	48.72	55.19
Steelworks Scrap Composite.....	6.16	6.00	6.06	7.03	8.79	15.25

Iron and Steel Composite:—Pig iron billets, slabs, sheet bars, wire rods, tin plate, nails, sheets, plates, shapes, bars. Finished Steel Composite:—Plates, shapes, bars, hot strip, nails, tin plate, pipe. Steelworks Scra Composite:—Melting steel, compressed sheets.

Comparative Prices of Iron, Steel and Coke

Representative Market Figures for Current Week, Last Month, Three Months and One Year Ago

	Aug. 13, 1932	July 1932	May 1932	Aug. 1931
PIG IRON				
Bessemer, del., Pittsburgh	$15.76	15.76	16.13	18.26
Basic, valley	14.00	14.00	15.00	17.00
Basic, eastern, del., eastern Pa.	13.75	14.25	15.00	16.75
No. 2 foundry, del. Pittsburgh	15.76	15.76	16.16	18.26
No. 2 foundry, Chicago	15.50	15.50	15.60	17.50
*Southern No. 2, Birmingham	11.00	11.00	11.00	12.00
**No. 2X, Virginia furnace	17.75	18.00	18.00	18.25
**No. 2X, Eastern del. Phila.	14.26	14.76	15.13½	17.51
Malleable, valley	14.50	14.50	15.00	17.00
Malleable, Chicago	15.50	15.50	15.60	17.50
Lake Superior, charcoal, del. Chi.	23.04	23.04	23.04	27.04
Gray forge, del. Pittsburgh	15.63	15.63	15.63	17.63
Ferromanganese, del. Pittsburgh	73.24	73.24	80.24	89.79

*1.75-2.25 silicon. For local delivery. Northern shipments based on $10, Birmingham. **2.25-2.75 silicon.

Delivered pig iron prices subject to 10 per cent freight surcharge, maximum 13.44c per gross ton, beginning Jan. 4, 1932.

COKE				
Connellsville, furnace, ovens	2.00	2.00	2.15	2.40
Connellsville foundry, ovens	3.00	3.00	3.15	3.25
SEMIFINISHED MATERIAL				
Sheet bars, open-hearth, Youngs.	26.00	26.00	26.00	29.00
Sheet bars, open-hearth, Pitts.	26.00	26.00	26.00	29.00
Billets, open-hearth, Pittsburgh	26.00	26.00	27.00	29.00
Wire rods, Pittsburgh	37.00	37.00	37.00	35.00

	Aug. 13, 1932	July 1932	May 1932	Aug. 1931
FINISHED MATERIAL				
Steel bars, Pittsburgh	1.60	1.60	1.60	1.60
Steel bars, Chicago	1.70	1.70	1.70	1.70
Steel bars, Philadelphia	1.91	1.91	1.91	1.89
Iron bars, Chicago	1.65	1.65	1.65	1.70
Shapes, Pittsburgh	1.60	1.60	1.60	1.60
Shapes, Philadelphia	1.75	1.75	1.75	1.76
Shapes, Chicago	1.70	1.70	1.70	1.70
Tank plates, Pittsburgh	1.60	1.60	1.60	1.60
Tank plates, Philadelphia	1.79½	1.79½	1.79½	1.80½
Tank plates, Chicago	1.70	1.70	1.70	1.70
Sheets, No. 10 blue anneal., Pitts.	1.70	1.70	1.70	1.85
†Sheets, No. 24, hot, ann., Pitts.	2.20	2.20	2.20	2.40
Sheets, No. 24, galvan., Pitts.	2.75	2.85	2.85	2.90
Sheets, No. 10 blue anneal., Chi.	1.85	1.85	1.85	2.00
†Sheets, No. 24, hot ann., Chi.	2.35	2.35	2.35	2.55
Sheets, No. 24 galvan., Chi.	3.00	3.00	3.00	3.05
Plain wire, Pittsburgh	2.20	2.20	2.20	2.20
Wire nails, Pittsburgh	1.95	1.95	1.95	1.90
Tin plate, per base box, Pitts.	4.75	4.75	4.75	5.00

*Comparisons are with old classification No. 24 black sheets.

SCRAP				
Heavy melting steel, Pitts.	$8.75	8.35	9.75	10.70
Heavy melting steel, eastern Pa.	6.25	6.25	6.44	8.55
Heavy melting steel, Chicago	5.75	4.50	6.20	8.25
No. 1 wrought, eastern Pa.	6.25	6.25	7.75	9.75
No. 1 wrought, Chicago	4.25	4.00	5.25	8.25
Rails for rolling, Chicago	6.75	6.60	8.25	10.50

Sheets

Market Is Easier—Eastern Mills Revive Custom of Jobber Allowances on Direct Shipments

SHEET PRICES, PAGE 43

Pittsburgh — Sheet specifications were barely able to maintain a 10 per cent mill operating rate last week, the lowest in many years, in point of specifications and shipments. The absence of demand is especially marked in cold-rolled grades. Galvanized sheets lead. Sheet interests foresee a heavy market in railroad car top replacements. Two independent sheet mills are closed, as is one at Baltimore and one at Buffalo. Some activity still is prevalent in specialties. Galvanized sheets are 2.85c, and hot-rolled sheet prices also are unchanged. Cold-rolled sheets are extremely quiet, continuing at 2.25c and 2.75c, depending upon gage.

New York—Sheet prices are irregular. Perhaps the sharpest concession in this market in some time was a price of 2.30c, Pittsburgh, on less than 50 tons of No. 20 cold rolled, $9 a ton under the official price. Galvanized sheets still are available as low as 2.60c, Pittsburgh, and as low as 2.00c can be done on No. 24 hot-rolled annealed, although the usual price is 2.10c to 2.20c. Some mills have revived the policy of allowing jobbers $2 a ton on direct carload shipments of galvanized sheets to their customers, while quoting all buyers 3.00c, Pittsburgh, on less than carlots. At least one mill is allowing $1 to jobbers on black sheets in car lots for direct shipment.

Philadelphia—Galvanized sheets are offered at 2.60c, Pittsburgh, compared with the nominal quotation of 2.85c. Certain mills are allowing jobbers $2 a ton on direct carload shipments to customers, but others have taken no action. At least one mill is attempting to establish 3.00c, Pittsburgh, on less than carlots to all buyers. Prices also are unsettled on cold rolled sheets.

Youngstown, O. — Independent sheet mills in this district are reducing operating schedules. Some sales of black and galvanized sheets continue to be made, but autobody sheets are lagging. Quotations have become more irregular, with common black ranging from 2.10 to 2.20c, Pittsburgh; and autobody from 2.60 to 2.90c, depending upon the tonnage.

Cleveland—Before the close of the month sheetmakers expect to receive some specifications for new automobile models, and also releases from refrigerator manufacturers who are preparing new models, but for the present demand from these sources is quiet. Inquiry from the building industry is a little more active, especially for galvanized. Bids closed Aug. 11 on the heating and ventilating contract for the Cleveland underground muncipal auditorium, requiring 165 tons of galvanized sheets, and the contract is expected to be awarded this week. Sheet prices are easier. Galvanized, nominally 2.85c, base, Pittsburgh, have been offered generally at 2.75c, and in some instances at 2.70c. Concessions of $2 a ton from 2.20c have apeared on black sheets. Makers quoting 2.80c on automotive sheets have encountered quotations of 2.60c.

Cincinnati — Interest in future sheet requirements is developing. Spot orders are light.

Chicago—Sheet orders continue at a sharply depressed level, with mill operations not above 10 per cent and production of some grades at barely one-half that rate. Producers remain hopeful for some improvement in demand over the next 30 days but see little indication of any material improvement this month. Sharp price concessions in some districts have proved rather unsettling although quotations are unchanged.

Birmingham, Ala.—The two modern sheet mills in this district are keeping active, with demand fairly good for roofing and other building material. Prospects are reported better.

Current Finished Steel Prices

Delivered prices subject to freight surcharge corrected to nearest ½c. Asterisk denotes price change this week

Steel Sheets

HOT ROLLED No. 10
(24 to 48 inches wide)

Pittsburgh, base	1.55c
Gary, Ind. Harbor, base	1.65c
Chicago, del.	1.70c
New York, del.	1.90c
Birmingham, base	1.70c
Philadelphia, del.	1.86c

BLUE ANNEALED NO. 9-10

Pittsburgh, base	1.70c
Chicago, district mills	1.80c
Chicago, delivered	1.85c
Philadelphia, del.	2.01c
New York, del.	2.05c
St. Louis, delivered	2.07½c
Birmingham	1.85c
San Francisco c.i.f.	2.32½c

HOT ROLLED ANNEALED NO. 24

Pittsburgh, base	2.10c to 2.20c
Gary, Ind. Harbor, base	2.30c
Chicago, del.	2.35c
*New York, del.	2.45c to 2.55c
*Philadelphia, del.	2.41c to 2.55c
Birmingham, base	2.35c
St. Louis, del.	2.57½c
San Francisco, c.i.f.	2.85c

GALVANIZED NO. 24

*Pittsburgh, base	2.75c to 2.85c
Gary, Ind. Harbor, base	2.95c
Chicago, del.	3.00c
*Philadelphia, del.	3.06c to 3.16c
Birmingham, base	3.00c
St. Louis, del.	3.22½c
San Francisco, c.i.f	3.50c

AUTOMOBILE NO. 20

Pittsburgh, base	2.60c to 2.90c

FURNITURE

Pitts., No. 10 heavy	2.65c
Pitts., No. 20 light	3.15c

TIN MILL BLACK NO. 28

Pittsburgh, base	2.40c to 2.50c
Gary, base	2.50c to 2.60c
St. Louis, del.	2.77½c to 2.82½c

HEAVY COLD ROLLED NO. 10

Pittsburgh, base	2.25c
Gary, Ind. Harbor, base	2.35c
Chicago, del.	2.40c
Philadelphia, del.	2.56c
New York, del.	2.60c
St. Louis, del.	2.62½c

COLD ROLLED NO. 20

Pittsburgh, base	2.75c
Gary, Ind. Harbor, base	2.85c
Chicago, del.	2.90c
*Philadelphia, del.	2.96c to 3.06c
*New York, del.	3.00c to 3.10c
St. Louis, del.	3.12½c

TIN AND TERNE PLATE
Per 100-pound box, Pittsburgh

Tin plate, coke base	$4.75
*Long ternes, 24, unassort	2.80c

Gary, Ind., base 10 cents higher

Wire Products

(Prices apply on straight carloads. Mixed and joint carloads take 10 cents higher price; pool carloads 25-cent advance; less carloads 40-cent advance.)

F.o.b. mills, 100 lb. keg

Standard wire nails	$1.95
Cement coated nails	1.95
Galvanized nails	3.95

(Per pound)

Polished staples	2.50c
Galvanized staples	2.75c
Barbed wire, gal.	2.60c
Annealed fence wire	2.35c
Galvanized wire	2.80c
Woven wire fencing, (9-11 ga.)	$55.00
(12½ ga. and lighter)	$60.00

(To Manufacturing Trade)

Plain wire, 6-9 gage	2.20c
Spring wire	3.20c

Chicago and Anderson, Ind., $1 over Pitts.-Cleve.; Duluth and Worcester, $2 higher; Fairfield, Ala., $3 higher.

Steel Plates

Pittsburgh, base	1.60c
Philadelphia, del.	1.79½c
New York, delivered	1.90c
Boston, delivered	2.02c
Buffalo, del.	1.85½c
Chicago, base	1.70c
Cleveland, del.	1.78½c
Birmingham, Ala., base	1.75c
Coatesville, Pa., base	1.70c
Pacific Coast, c.i.f.	2.00c
St. Louis, del.	1.97½c

Structural Shapes

Pittsburgh, base	1.60c
Philadelphia, del.	1.75c
New York, del.	1.87c
Boston, del.	2.00½c
Chicago, base	1.70c
Cleveland, del.	1.78½c
Lackawanna, N. Y., base	1.70c
Birmingham, Ala., base	1.75c
Pacific Coast, c.i.f.	2.10c
Do., wide flange	2.20c

Bars

SOFT STEEL

Pittsburgh, base	1.60c
Chicago, base	1.70c
Birmingham, Ala., base	1.75c
Lackawanna, N. Y., base	1.70c
Pacific Coast, c.i.f.	2.00c
Cleveland, base	1.65c
*Philadelphia, del.	1.91c
*New York, del.	1.95c
Boston, del.	2.02c
Pittsburgh, cold finish	1.75c
Pittsburgh, forg. qual.	1.85c
San Francisco, c.i.f.	2.10c

RAIL STEEL

Chicago Heights	1.50c
Eastern mills	1.30c to 1.45c

IRON

Chicago, base	1.65c
New York, delivered	1.85c to 1.95c
Philadelphia, delivered	1.86c to 1.96c
Pittsburgh, refined	2.70c to 4.20c

REINFORCING

Pitts., billet cut lengths	1.75c
Pitts., stock lengths, mill	1.60c
Chi., billet	1.60c to 1.75c
Chi., rail steel	1.45c
Chi., rail steel, road, bridge and culvert	1.45c
*Philadelphia, cut lengths	1.96c to 2.06c
Cleveland, cut lengths	1.75c

Cold-Finished Bars, Shafting

Min. 10,000 lbs. of kind and grade

Pittsburgh	1.70c
Chicago, Buff., Cleveland	1.75c
Detroit	1.90c
Eastern Michigan	1.95c

Corrosion, Heat Resist. Alloys

Base, Pittsburgh

18 per cent chrome, 8 per cent nickel
Sheets, 35c; plates, 31c; bars, 28c.

	A	B	C	D
Bars	19c	20.5c	23c	28c
Plates	21c	22.5c	25c	30c
Sheets	26c	27.5c	30c	35c
Hot Strip	19c	20.5c	23c	28c
Cold strip	25c	26.5c	29c	34c

Carbon 0.12 and under; no nickel. A has chrome 15% and under. B over 15/18% inc., C over 18/23% inc., D over 23/30%.

Wrought Washers

Carloads, Pitts. dist	$6.50 to 6.75 off
Carloads, Chicago dist	7.00 to 7.50 off

Alloy Steel

Hot Rolled—F.o.b. Mills

Alloy Quality Bars, 2.45c-2.65c, mill
(Differentials to various classes of consumers)

S.A.E.	Alloy Diff.	4600 .20 to .30 Mo. 1.25-1.75 Ni.	1.05
2000	0.25	5100 .80 - 1.10	
2100	0.55	Cr.	0.45
2300	1.50	51.00 Cr.	
2500	2.25	spring	0.20
3100	0.55	6100 bars	1.20
3200	1.35	6100 Spring	0.95
3300	3.80	Cr., Ni., Van.	1.50
3400	3.20	Carbon Van	0.95
4100 .15 to .25		9250 (flats)	0.25
Mo.	0.50	9250 (rds.,sq.)	0.50

Strip, Hoops, Bands

Hot-rolled strip up to 23 15/16 in. wide, Pitts.	1.45c to 1.50c
Do, Chicago	1.55c to 1.60c
Do., del. Philadelphia	1.76c to 1.81c
Do., del. NewYork	1.80c to 1.85c
Cooperage hoop, Pitts.	1.55c to 1.60c
Do., Chicago	1.65c to 1.70c
Cold-roll, strip, Pitts., Cleve.	2.00c
Worcester, 3 tons over	2.20c

Rivets

Struc., c.l., Pitts.-Cleve.	2.25c
Struc., c.l., Chicago	2.35c
7/16-in. and smaller, Pitts., Chicago, Cleve.	70, 10 and 5 off

Rails, Track Material

Standard rails, mill	$43.00
Relay rails, Pitts., 20 to 45 lbs.	$21.00 to 23.00
50 to 75	18.00 to 20.00
*80 to 100	23.00 to 25.00
Light rails, 25-45, mills	$32.00
Light rails, Chicago	$34.00
Angle bars, mills	2.75c
Spikes, railroad, mills	2.60c
Spikes, boat, barge, Pitts.	2.75c
Track bolts, Chicago	3.50c
Do, standard, jobbers	73 off list
Tie plates, mills	$37.00

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham, Chi. Discounts to legitimate jobbing or large consuming trade for full-case lots apply to May 10, 1930, lists.

CARRIAGE BOLTS

All sizes, cut thread	75 off
Rolled thread ⅜ x 6 and smaller take 10 per cent lower list.	
Eagle list	75 off

MACHINE BOLTS

All sizes, cut thread, lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts without nuts	75 off
Tire bolts	60 and 10 off
Stove bolts, 77½, 25 and 10 off in pkgs.; 86 off in bulk.	
Rolled thread machine bolts, ⅜ x 6 and smaller take 10 per cent lower list.	

NUTS

Semifinished	75 off

HEXAGON CAP SCREWS

Milled	80-25 off
Upset 1 in. diam. and smaller	80-25-10 off

SQUARE HEAD SET SCREWS

Upset, 1 in. and smaller	75-10-10 off
Headless set screws	75-10 off
Upset, larger than 1 in	75-10 off

Cut Nails, Chain, Piling

Cut nails, c.l. Pittsburgh	$2.50
Do. less carloads, 5 kegs or over	$2.90
Less than 5 kegs	$3.05
Chain, BB, BBB, 9/16-1½ in.	33 1/3 off
Steel sheet piling, Pitts.	1.90c

Bars

Some Increase in Buying Gives Market Better Feeling—Smaller Users Increase Orders

BAR PRICES, PAGE 43

Chicago—Restricted operations of most bar consumers are reflected in recent specifications, which are unimproved from the rate of preceding weeks.

Forward bar buying generally is lacking and despite more favorable prospects among some users, ordering is largely for prompt needs. Automotive specifications continue to decline and farm implement manufacturers remain inactive. Railroads are taking only small lots. Demand for bar iron is at the lowest level of the year, showing a slight decrease since a month ago. Prices are receiving little test, generally continuing 1.70c for soft steel, 1.50c for rail steel and 1.65c for bar iron.

Philadelphia — Commercial steel bars are included in a lot of 150 to 200 tons of miscellaneous steel now pending for a shipyard in this district. An additional modest quantity of bars for shipwork is being figured. Demand generally remains light, with 1.60c, Pittsburgh, prevailing on both steel and common iron bars.

Pittsburgh—Hot-rolled bar orders have been slightly increased the past week and there is a shade better inquiry. The forging bar trade is preparing to accept the new quality classification which is based on size of stock desired, for fourth quarter. In the meantime, forging bar orders are as dull as in July. Alloy bar demand could be greatly improved. Prices for carbon steel bars are generally based on 1.60c. A small grouping of carbon bars was rolled at the Carnegie Steel Co.'s Ohio works last week.

Youngstown, O.—Resumption this week by Ohio works of the Carnegie Steel Co. follows more interest in steel bars by miscellaneous consumers.

However, the decline in automotive demand is lessening activities of alloy barmakers in this district. Common steel bars at 1.60c, Pittsburgh, appear to be the most firmly held of finished steel products, this price not being questioned.

Cleveland — Road-building equipment builders are placing better orders for commercial steel bars and some fair size sales also are being made for railroad equipment purposes. Automotive tonnage, however, has declined considerably, bringing the general volume below the July rate. The price is firm at 1.65c, base, Cleveland.

Tin Plate Operations Easier; Gain Anticipated

Tin Plate Prices, Page 43

Pittsburgh—The tin plate operating rate this week is slightly easier at 35 to 40 per cent. A West Virginia mill has temporarily closed two of its tin plate divisions and is operating at 50 per cent in its third mill. Operations of a local independent are continuing at a good level. Present operating schedules point to a gain to 40 per cent for this week in tin mills. Canmakers are issuing rush specifications generally. Tin plate per base box is steady and unchanged at $4.75.

Youngstown, O.—Demand for tin plate continues to keep district mills operating around 40 to 45 per cent. While some of this plate goes into automotive parts, most of it is for canners. The red salmon pack in the Pacific Northwest is much larger than usual. Tin plate on contract holds at $4.75 per 100 pounds.

Cold-Finished Buying Is Light at Firm Prices

Cold Finished Prices, Page 43

Pittsburgh—Cold-finished steel bar orders are light, in keeping with curtailment in automobile manufacturing schedules. There will probably not be a resumption in specifications during August. There is apparently no difficulty in obtaining the minimum price of 1.70c for 10,000-pound lots or more.

Plates

Many Bidders for Small Jobs—Awards Still Light—Western Tank Work Held in Abeyance

PLATE PRICES, PAGE 43

Chicago—Awards of fabricated plate jobs are few and require only small lots. Specifications also are extremely dull, still being affected by poor operations in the railroad, tank building and pipe line industries. The market is nominally unchanged at 1.70c, Chicago.

Boston—Approximately 920 tons of plates have been placed for various navy yards, openings of June 21 and July 12. Under the former, 118 tons are for Boston, the Central Iron & Steel Co., and American Rolling Mill Co. sharing in the business. A fair tonnage also was placed for Boston under the July 12 opening, although the bulk was for the Pacific Coast. The Boston Metropolitan district commission, water division, will open bids Aug. 18 on four small fuel oil tanks and mechanical equipment for 11 boilers. Plates are steady at 1.70c, Coatesville.

New York—Miscellaneous plate demand is slightly better, but devoid of outstanding orders. The Kellogg Co., Jersey City, N. J., is inquiring for a tonnage for bubble towers, and some other oil country requirements are under negotiations. Plates generally are 1.70c, base, Coatesville, Pa.

Philadelphia—Approximately 300 tons of plates are likely to be placed shortly by Pusey & Jones, Wilmington, Del., who have been awarded the contract for construction of a government lighthouse tender. About 150 tons of shapes and bars also will be required. Taylor & Co., Betzwood, Pa., is understood to have closed on 100 tons of tank work. Mills generally are quoting 1.70c. Joseph T. Ryerson & Son Inc. booked approximately 55 tons for the navy, opening of July 12, most being for Philadelphia and Boston.

Pittsburgh—Bids close Aug. 17 for the Memphis, Tenn., dry dock and the project has attracted well over 30 shipyards and tank fabricators. More than 35 bids were received for a 37-ton steel hull for the Brooklyn, N. Y., navy yard for delivery to Panama. This was placed with the Brewer Dry Dock Co., Staten Island, N. Y. The plate fabricator on the Youngstown, O., water tanks sublet 500 tons of light angles and structural material to the Truscon Steel Co., Youngstown, O. Kendall Oil Co., Bradford, Pa., has placed an order for a complete vacuum distillation plant with Alco Products Inc., Dunkirk, N. Y., requiring an unstated tonnage of plates. The market generally is 1.60c, Pittsburgh.

Cleveland—Current plate require-

ments are restricted to small lots, but the market is firm at 1.60c, base, Pittsburgh. Otis Steel Co. operated its plate mills at 50 per cent, single turn, last week, but the rate will be slower this week.

Contracts Placed

565 tons, navy, various yards, mainly for Pacific coast, divided among Alan Wood Steel Co., Enterprise Galvanizing Co. and Central Iron & Steel Co.; bids of July 12.

355 tons, navy destroyers, Boston, Brooklyn, N. Y., and Puget Sound, Wash., 245 tons, to Central Iron & Steel Co., Harrisburg, Pa.; 110 tons, to American Rolling Mill Co., Middletown, O.; bids June 21.

125 tons, 200,000-gallon steel tank and tower, El Reno, Okla., to Chicago Bridge & Iron Works, Chicago.

100 tons, tanks, Taylor & Co., Betzwood, Pa., to unnamed platemaker.

Unstated tonnage, tank and tower, veterans' hospital, Fayetteville, Ark., to W. E. Caldwell Co., Louisville, Ky.

Contracts Pending

990 tons, toe protectors, breakwater, Santa Monica, Calif., bids postponed from Aug. 5 to Aug. 12.

400 tons, boiler equipment, plant at Wilmington, Calif., for Los Angeles; bids opened.

100 tons, boiler for naval training station, San Diego, Calif., bids Aug. 9.

Unstated tonnage, 740,000-gallon tank, navy, Mare Island, Calif., bids postponed from Aug. 10 to 17.

Unstated tonnage, one or two steel barges, United States engineer, Washington; bids Sept. 7.

Railroad Equipment Survey Shows Heavy Steel Needs

(*Concluded from Page* 13)

expense in forging down larger sizes they may have on hand.

A considerable proportion of railroad car shop equipment is in poor condition, or obsolete. Railroads have bought machine tool equipment sparingly for four or five years, having tightened up on expenditures in this direction even before the depression started. As a result many roads are not properly equipped to do the repair work which is piling up.

Limited but much needed bridge building and repairs have been done by most of the railroads, but railroad bridge building in general has lagged far below normal during the last year or two, while repairs have been restricted to absolute requirements as regards to safety. As a result of this the potential needs for railroad bridge steel also are heavy.

Business conditions have held up large grade crossing programs which in some instances have already been ordered by the states. Payment for such grade crossing work is generally split between the state and the railroad. In some instances local communities bear a part to the expense. In this situation the state and local authorities are in no better position to go ahead with the work than the railroads. As a result, considerable work is held up. True, some grade crossing work is going ahead, but only a small part of that planned and partially ordered by the state officials.

This is the second and concluding article on pent-up railroad steel requirements, the first having appeared in STEEL, *Aug. 8. An article on automotive requirements was published in the Aug. 1 issue; one on farms, July 25. Surveys on per capita and general steel requirements, which have been built up as a result of suspended buying in the past two years, were published in the issues of May 30, July 4, and July 18. Articles on steel needed in the building industry, and in oil, gas and water services will appear in early issues.*

Display Prize Bridge Plans

Photographs and drawings of the current prize winning bridges in the annual competition of the American Institute of Steel Construction have been placed on display in the lobby of the Engineering Societies building, 29 West Thirty-ninth street, New York. The exhibition probably will be sent to other cities for display.

Railroads

Rail Production Stops and Track Supply Demand Is Light—Repair Work Basis of Future Hope

TRACK MATERIAL PRICES, PAGE 43

New York—While plans for a comprehensive program of repairs and purchase of new equipment apparently have received a setback as a result of recent negotiations between railroad executives and the government relative to loans, the belief persists among railroad supply sellers that substantial buying will develop this fall by individual carriers. Current buying of cars and locomotives is negligible.

Pittsburgh—Rolling of rails at the Edgar Thomson works of the Carnegie Steel Co. ceased Aug. 11 and there is no early prospect for another group rolling. It is admitted that at least three, and maybe four, Class I railroads are urgently in need of new rails but no release has been forthcoming. Report credits the Baltimore & Ohio with contemplating a large rail purchase shortly, but without confirmation. Railroad track materials are quiet and especially spikes. Prices continue unchanged with tie plates $37 a ton and spikes 2.60c. Light rails are dull at about $32 and angle bars continue 2.75c. Relaying rails are in a quiet market with 80 to 100-pound sections now best represented at $23 to $25 a ton.

Cleveland—Erie railroad has closed on its recent inquiry for 500,000 screw spikes, purchasing considerably more than for which it inquired, and dividing the order among the Bethlehem Steel Corp., Republic Steel Corp., Oliver Iron & Steel Co. and the Lamson & Sessions Co., Cleveland, for immediate shipment. An order for necessary nut locks, 888,700, will be placed, probably this week. The railroad material market has a brighter outlook. New York Central car shops at Toledo, O., have resumed on a 5-day week basis.

Chicago—Interest of railroad equipment manufacturers and steel mills is centered on the outcome of the proposal that railroads make new purchases with funds furnished by the Reconstruction Finance Corp. Little hope is entertained for an early increase in railroad buying, but there is a growing belief that purchases of additional equipment and supplies cannot be long deferred. Activity in steel purchases recently has been unchanged, rail releases being absent and purchases for repair work remain extremely small. Releases of track material are off moderately.

Car Orders Placed

Navy, Puget Sound, one flat car, to Haffner-Thrall Car Co., Chicago.

Navy, Mountain View, Calif., three steel flat cars and one steel box car, part to Koppel Industrial Car & Equipment Co., Koppel, Pa., part to Haffner-Thrall Car Co., Chicago; bids July 19.

Locomotives Placed

Chief, army engineers, Washington, one 30-ton gasoline electric drive locomotive, to the Whitcomb Co., Rochelle, Ill.

Locomotives Pending

Navy, Mountain View, Calif., one switching locomotive, bids in.

Structural Shapes

Awards Near Yearly Average—Bridge, Postoffice Jobs Lead—15,000 Tons in View for Sightseeing Tower—Americans Receive Hoover Dam Sheet Piling Tonnage

STRUCTURAL SHAPE PRICES, PAGE 43

New York—Structural requirements are largely for public work, mainly bridges. Inquiry includes state hospitals, about 1500 tons, on which bids are in. Potential inquiry is heavy, but not yet active. About 2200 tons are expected to be placed this week for the Jamaica, N. Y., armory. Exclusive of bridges, awards in the metropolitan area during July totaled 6510 tons, according to the Structural Steel Board of Trade. This compares with 3496 tons in June and 18,850 tons in July, 1931.

Boston—Structural lettings in New England territory for the week are close to 800 tons, more than half representing state highway bridges. Plain material prices are unchanged at 1.70c, eastern mill, but fabricators are offering some low quotations.

Philadelphia—The past week in structural shapes has been the most featureless in a considerable time. Five hundred tons of sheet piling for an air conditioning system in a group of treasury department buildings have been awarded by a Philadelphia general contractor to the Kalman Steel Corp., Bethlehem, Pa.

Cleveland—Additional state bridge projects being figured for award this month have increased the amount of structural shapes pending from 2000 up to 2500 tons. Bids are going in on several fair-sized private jobs, including 300 tons for a factory addition at Toledo, O. For a local bridge near Lorain, O., 80 tons were placed with a Cleveland fabricator. The proposed Lakewood, O., hospital, now in litigation, may develop several hundred tons in the fall.

Chicago—Awards and inquiries are slightly more numerous, although tonnage shows little change. Bridges and postoffices make up the bulk of active projects. About 15,000 tons will be required for a sightseeing tower here, plans for which await completion of financing. A bridge at Ottawa, Ill., will take 1800 tons, and a courthouse at Bay City, Mich., 1200 tons. Additional buildings for the Century of Progress exposition require 2000 tons.

Pittsburgh—Highway bridges constitute the majority of awards and new inquiries. The Blaw-Knox Co., has taken 1000 tons of light angles and channels for transmission towers for the Safe Harbor Power Corp. A warehouse at Mansfield, O., for the Westinghouse Electric & Mfg. Co. calls for 380 tons which will be cut and welded in the field. Sheet piling for the Hoover dam, Boulder, Nev., 290 tons, on which German interests were low, has been awarded to Carnegie Steel Co. Plain material is firmer at 1.60c, base, Pittsburgh, as many protections at lower figures have expired.

Contracts Placed

2200 tons, state bridge, Canadian county, Oklahoma, to American Bridge Co., Pittsburgh.

1500 tons, postoffice, Rochester, N. Y., to McClintic-Marshall Corp., Bethlehem, Pa., through N. P. Severin Co., Chicago.

1000 tons, transmission towers for Safe Harbor Power Corp., to Blaw-Knox Co., Blawnox, Pa.

535 tons, state bridge, Childress county, Texas, to Mosher Steel & Machinery Co., Dallas; O. Speer, Alvord, Tex., contractor.

500 tons, sheet piling air conditioning system, group of treasury buildings Washington, placed through P. & A. J. Ellis, general contractors, Philadelphia, with Kalman Steel Corp., Bethlehem, Pa.

500 tons, light angles and channels, water tank supports for Youngstown, O., to Truscon Steel Co., Youngstown; balance, 700 tons of plates already awarded.

475 tons, bridges, on Newton-Wellesley section, Boston-Worcester, Mass., turnpike, to Lackawanna Steel Construction Corp., Buffalo; Coleman Bros. Inc., general contractor.

430 tons, bridge, Erie railroad, Erwins, N. Y., to Jones & Laughlin Steel Corp., Pittsburgh.

400 tons, state bridges, Potsdam and Cortland, N. Y., to Lackawanna Steel Construction Corp., Buffalo.

400 tons, grain elevator and cattle runway, Swift & Co., Chicago, to Gage Structural Steel Co., Chicago.

385 tons, state bridges, Harrison and Panela counties, Texas, to Petroleum Iron Works; Beaumont, Tex.

360 tons, including 290 tons sheet piling, Hoover dam, Boulder, Nev., and 70 tons sheet piling, bureau of lighthouses, to Carnegie Steel Co., Washington. Low German bids on both projects rejected.

350 tons, state bridges, Texas, Virginia Bridge & Iron Co., Roanoke, Va.

350 tons, highway bridge, Indiana, to Pan-American Bridge Co., Newcastle, Ind.

320 tons, highway bridge, Linfield, Pa., to McClintic-Marshall Corp., Bethlehem, Pa.

280 tons, three state bridges, Delta and Lamar counties, Texas, to Petroleum Iron Works Co., Beaumont, Tex.; George W. Condon & Co., Dallas, general contractor.

270 tons, highway bridge, Fairview, Md., to McClintic-Marshall Corp., Bethlehem, Pa.

238 tons, bridge, S. P. 1002-B Wood county, Texas, to Austin Bros., Dallas, Tex.; J. L. Markham, Sulphur Springs, Tex., contractor.

225 tons, state bridge, Coke county, Texas, to Mosher Steel & Machinery Co., Dallas, Tex.

250 tons, warehouse, Jordan & Marsh department store, Boston, to New England Structural Co., Boston.

240 tons, bridge, Steuben county, New York, to American Bridge Co., Pittsburgh.

240 tons, underframes, Pacific Fruit Express Co., San Francisco, to unnamed interest.

200 tons, postoffice, Waukegan, Ill., to Duffin Iron Co., Chicago.

200 tons, highway bridges, Beaver county, Okla., to J. B. Klein Iron Foundry Co., Oklahoma City, Okla.

200 tons, factory building, Cloquet, Minn., to American Bridge Co., Pittsburgh.

200 tons, bridge, Washington county, Maryland, to McClintic-Marshall Corp., Bethlehem, Pa.

150 tons, jail equipment, San Quentin, Calif., to Judson-Pacific Co., San Francisco.

150 tons, state bridges, Lipscomb county, Texas, to Houston Structural Steel Co., Houston, Tex., W. S. Crawford Co., Dallas, Tex., contractor.

144 tons, three bridges in Johnson county, Wyoming to unnamed interest.

135 tons, highway bridges, Jackson county, Missouri, to Kansas City Structural Steel Co., Kansas City, Mo.

130 tons, alterations, Mills building, San Francisco, to Fair Mfg. Co., San Francisco.

130 tons, Colorado river bridge, Coke county, Texas, to Houston Structural Steel Co., Houston, Tex.; D. F. Jones Construction Co., Little Rock, Ark., general contractor.

125 tons, state bridge, Monroe county, New York, to McClintic-Marshall Corp., Bethlehem, Pa.

125 tons, foundations, federal courthouse, New York, to Phoenix Bridge Co., Phoenixville, Pa.

120 tons, bridge, Walden, N. Y., to Lackawanna Steel Construction Corp., Buffalo.

118 tons, Giddings school, Washington, to Dietrich Bros., Baltimore; Northeastern Construction Co., Washington, contractor.

Awards Compared

	Tons
Awards, week ended Aug. 13	**13,805**
Awards, week ended Aug. 6	**13,390**
Awards, week ended July 30	**24,957**
Awards, this week in 1931	**24,904**
Av. weekly awards, 1931	**34,236**
Av. weekly awards, 1932	**15,516**
Av. weekly awards, July	**16,497**
Awards to date, 1931	**1,185,364**
Awards, to date, 1932	**512,055**

100 tons, highway bridges, Indiana, to Vincennes Bridge Co., Vincennes, Ind.

100 tons, steel tower, Fort Weaver, T. H., to unnamed interest.

100 tons, aerial beacons in California, Arizona and New Mexico, for department of commerce, to unnamed interest.

Unstated tonnage, steel sheet piling, Cape Hatteras, United States, engineer Baltimore, to Carnegie Steel Co., Pittsburgh $3168.83 delivered.

Unstated tonnage, bridge, Nueces river, and relief bridge, highway 3, Uvalde county, Texas, to Missouri Valley Bridge & Iron Co. Leavenworth, Kans., and spans to Petroleum Iron Works, Beaumont, Tex.

Contracts Pending

15,000 tons, sightseeing tower, Chicago; bids and contracts awaiting financing. Frank A. Randall, 205 West Wacker drive, Chicago, architect.

1800 tons, bridge, Ottawa, Ill.; bids on general contract Aug. 30.

1500 tons, states, social service and federal buildings, Chicago, Century of Progress exposition.

1200 tons, courthouse, Bay City, Mich.

800 tons, drink hall, Saratoga, N. Y.; C. &. W. Construction Co., Bronx, (New York) low.

800 tons, postoffice, Jackson, Miss.

800 tons, postoffice, Lexington, Ky.

750 tons, hospital buildings, Thiells, N. Y.; Clemente Contracting Co. Inc., Bronx, (New York) low

700 tons, state bridges, New York.

700 tons, bridge, Erie railroad, Port Jervis, N. Y.

550 tons, postoffice, Jackson, Tenn., bids Aug. 26.

500 tons, Sears, Roebuck & Co., building, Chicago, Century of Progress exposition.

400 tons, No. 1 viaduct, Mt. Washington roadway extension, Pittsburgh; American Bridge Co., Pittsburgh, low.

400 tons, viaduct No. 2, Mt. Washington roadway extension, Pittsburgh.

380 tons, warehouse, Mansfield, O., for Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. Plain material to be cut and welded in the field.

350 tons, buildings and tunnels, Matteawan state hospital, New York; Louis Keil, Ossining, N. Y. low.

350 tons, ventilating building, East Boston end of Boston-East Boston traffic tunnel; bids Aug. 15.

350 tons, penitentiary cells, San Quentin, Calif., bids Aug. 16.

350 tons, three highway bridges, Connecticut.

300 tons, postoffice, Lynn., Mass.; W. E. O'Neil Construction Co., Chicago, low.

300 tons, drydock, Memphis, Tenn.

275 tons, bridges, Garvin and Murray counties, Oklahoma, state highway commission, bids Aug. 16.

250 tons, factory, Berst-Foster-Dixfield Co., Plattsburg, N. Y.

250 tons, postoffice, Sheboygan, Wis.

250 tons, Watson home for crippled children, Leetsdale, Pa.

200 tons, municipal buildings for Pittsburgh at Mayview, Pa.

200 tons, highway bridge, Grantsville, Md.

175 tons, state bridge over Erie railroad tracks, Ramsey, N. J.

100 tons, bridges, Lee, Mass.

Unstated tonnage, postoffice addition, Council Bluffs, Iowa; bids Sept. 1.

Concrete Bars

Public Projects Holding Up In Many Districts—3300 Tons Pending for Louisville, Ky., Over 3000 Tons New Inquiry for New York, New Jersey Highways

REINFORCING BAR PRICES, PAGE 43

New York—Reinforcing bar inquiry is light, although a fair tonnage is pending for New Jersey and New York bridges and highways. According to the present plan considered, the west side elevated highway foundations, for which Necaro Co. Inc., is contractor, will take few bars, but a substantial tonnage of large steel pipe for caissons. Billet bars are fairly steady at 1.95c, delivered, New York, while cut lengths are 2.10.

Approximately 3000 tons of concrete bars have developed in new inquiries for New York, New Jersey and Connecticut. Two thousand tons of noncorrosive reinforcing fabric, steel core, copper covered, for flood control work in the Mississippi river, have been placed with the Copperweld Steel Co., Glassport, Pa., at $627,670, delivered, by the United States engineer, Memphis, Tenn.

Boston—Joseph T. Ryerson & Son Inc. booked close to 500 tons for Massachusetts state bridges and highway work, but except for this volume is small. Prices still are adversely influenced by rerolled and imported material.

Philadelphia—Award of 250 tons for the Bell Telephone Exchange building here features the market. Reinforcing bar prices continue unsettled notwithstanding efforts of leading sellers to firm the market at 1.75c, Pittsburgh, on cut lengths.

Pittsburgh—Steel for the bridge at Rochester, Pa., has finally been placed with the Fort Pitt Bridge Works, Pittsburgh, after some extended competition. Shipments of new billet steel and reinforcing steel are holding at the July rate. The price of 1.60c on new billet steel is steady.

Chicago—Larger reinforcing bar awards and inquiry are made up of public construction. Private projects, which recently have been slightly more active, are limited almost entirely to small lots. Prices are unchanged and fairly steady.

Awards Compared

	Tons
Awards, week ended Aug. 13	**3,971**
Awards, week ended Aug. 6	**3,270**
Awards, week ended July 30	**3,015**
Awards, this week, 1931	**3,444**
Av. weekly awards, 1931	**6,808**
Av. weekly awards, 1932	**4,172**
Av. weekly awards, June	**3,098**
Awards, to date, 1931	**232,121**
Awards, to date, 1932	**137,684**

Contracts Placed

550 tons, veterans' hospital, Fayetteville, Ark., to Concrete Engineering Co., Kansas City, Mo.; M. E. Gillioz, Monett, Mo., general contractor.

500 tons, highway and bridges, Newton-Wellesley section, Worcester-Boston turnpike, Massachusetts, to Joseph T. Ryerson & Son Inc.; Coleman Bros. Inc., Boston, general contractors.

300 tons, cigar factory, Trenton, N. J., to Truscon Steel Co., Youngstown, O., through Karno-Smith Co., general contractor.

250 tons, Bell Telephone Exchange, Philadelphia, to Taylor-Davis Inc.

215 tons, state bridge, Pecos county, Texas, to Concrete Engineering Co., Houston, Tex.; Lone Star Construction Co., San Antonio, contractor.

200 tons, factory building, Hoboken, N. Y., to Joseph T. Ryerson & Son Inc., New York.

200 tons, bridge, Beaver river, Rochester, Pa., to Fort Pitt Bridge Works, Pittsburgh, through Mike Manella, general contractor.

180 tons, postoffice, Sioux City, Iowa, to Laclede Steel Co., St. Louis.

150 tons, two state roads, Lane and Umatilla counties, Oregon, to unstated interests.

150 tons, Hamilton and Jefferson counties, Ohio, projects 360 and 341, to unstated fabricator, through E. A. Freshwater & Sons, Cincinnati, contractor.

150 tons, South Tenth street bridge, Pittsburgh, to Electric Welding Co., Pittsburgh.

130 tons, Highway, Lenox-Pittsfield, Mass., to Northern Steel Co., Boston; New Haven Road Construction Co., contractor.

130 tons, schoolhouse, Cincinnati to Jones & Laughlin Steel Corp., Pittsburgh, through Ferro-Concrete Construction Co., Cincinnati, contractors.

122 tons, three state bridges, Delta and Lamar counties, Texas, to Carter-Waters Corp., Oklahoma City, Okla.; George W. Condon & Co., Dallas, Tex., general contractor.

120 tons, Veterans' hospital, St. Cloud, Minn., to Concrete Engineering Co., Chicago.

113 tons, highway in Alameda county, Calif., to unnamed interest.

111 tons, Colorado river bridge, Coke county, Texas, to Concrete Engineering Co., Houston; D. F. Jones Con-

struction Co., Little Rock, Ark., general contractor.
100 tons, grain elevator, Michigan, to Calumet Steel Co., Chicago.
100 tons, hospital, El Centro, Calif., to unnamed interest.
100 tons, substructure, a garage for Philadelphia Savings Fund, Philadelphia, to Concrete Steel Co., Philadelphia.
100 tons, sewage plant, Hagerstown, Md., to Kalman Steel Corp., Bethlehem, Pa.

Contracts Pending

3300 tons, southwestern outfall, sewer section B, Louisville, Ky.; bids Sept. 15.
1600 tons, bars and mesh, highways and bridges, New York state; bids Aug. 16.
1510 tons, Pine Canyon dam, Pasadena, Calif., bids soon.
1325 tons, three highway sections, New Jersey; bids Aug. 29.
1237 tons, breakwater, Santa Monica, Calif., bids postponed from Aug. 5 to Aug. 12.
520 tons, stadium addition and dormitories, Louisiana state university Baton Rouge; Caldwell Bros., New Orleans, general contractor.
223 tons, highway, Los Angeles county, California, bids received.
150 tons, addition to Kern county hospital, Bakersfield, Calif., bids soon.
103 tons, bridge, Merced river, Merced county, Calif., bids opened.
100 tons, reservoir, Weimer, Calif., bids Aug. 11.
100 tons, addition to state office building, Redding, Calif., bids Aug. 15.

Wire Feels Some Signs Of Seasonal Fall Upturn

Wire Prices, Page 43

Chicago—Specifications for some wire products are slightly more active, although manufacturers' wire still is moving slowly. Jobbers are making only small additions to stocks and the movement of some products has shown little change. Improved buying in agricultural districts is expected to develop slowly, while the outlook among manufacturing consumers is uncertain. Prices are unchanged and fairly steady at $2 in carloads for wire nails, 2.25c for plain wire and $38 for wire rods.

Pittsburgh — The first signs of early fall increase in the merchant wire trade have not yet appeared and present orders are still on a routine basis for wire and nail products. Spring wire is moving slowly and some leading customers have not anticipated the first of their September requirements. American Barge Line has been awarded a contract for movement of about 2000 tons of steel wire mesh for flood control work on the Mississippi river. This is being produced at Donora, Pa., and Glassport, Pa. Plain wire is fairly firm at 2.20c and nails, $1.95, Pittsburgh.

Pipe

Lack of Financing Delays Public Projects—1000 Tons of Cast Placed for Council Bluffs, Iowa

PIPE PRICES, PAGE 56

New York—Cast pipe awards in the East approach 1000 tons, mainly in small orders. Although New York city pipe yards are depleted of stock, lack of funds holds up long pending inquiry for large tonnage. Prices are fairly firm at $28, foundry. A. P. Smith Mfg. Co., Orange, N. J. is low on 200 fire hydrants for Washington at $39.35, delivered. Approximately 500 tons of 8 5/16-inch pipe for the Standard Oil Co. of New Jersey have been placed with the South Chester Tube Co., according to reliable reports.

Boston—Except 800 tons for Newton, Mass., cast pipe buying is light. A Lynn, Mass., utility has bids on 150 tons. Prices are steadier, generally holding recent advances.

Pittsburgh—No material change is noted in steel pipe producers' order books. Mill operations are down to about 10 per cent. Sellers do not anticipate early improvement. The Washington central heating plant standard pipe, 400 tons, has not been bought.

Birmingham, Ala.—Sales and inquiries still lag and production is low. Some of the larger shops are closed.

Chicago—Delay in appropriations of federal funds for public work requiring cast iron pipe is seen as a deterrent to substantial business over the remainder of this year. Inquiries and awards recently have shown little change, although slightly more interest in future purchases is noted. Orders include 1000 tons for Council Bluffs, Iowa, and 300 tons for Fond du Lac, Wis. Prices show a stronger tone.

Cast Pipe Placed

1000 tons, 16-inch, Council Bluffs, Iowa, to American Cast Iron Pipe Co., Birmingham, Ala., and Glamorgan Pipe & Foundry Co., Lynchburg, Va.
300 tons, 14-inch, Fond du Lac, Wis., to Glamorgan Pipe & Foundry Co., Lynchburg, Va.
100 tons, 8-inch, Hammonton, N. J., to R. D. Wood & Co., Florence, N. J.
200 tons, 4 to 8-inch, Oneonta, N. Y., to R. D. Wood & Co., Florence, N. J.
300 tons, 6 and 8-inch, Lathams Corner, N. Y., to United States Pipe & Foundry Co., Burlington, N. J.
400 tons, 8-inch, reformatory, department of justice, El Reno, Okla., to United States Pipe & Foundry Co.
850 tons, 6 to 16-inch, Newton, Mass., to R. D. Wood & Co., Florence, N. J.
150 tons, 6-inch monocast, class 150, Puyallup, Wash., to American Cast Iron Pipe Co., Birmingham, Ala.
145 tons, 16-inch monocast, Blaine, Wash., to American Cast Iron Pipe Co., Birmingham, Ala.

Steel Pipe Placed

500 tons, 8 5/16-inch steel pipe, Standard Oil Co. of New Jersey, New York, reported to South Chester Tube Co., Chester, Pa.
250 tons, approximate, including 21,700 feet, 6-inch, steel or wrought, federal reformatotry, department of justice, El Reno, Okla., to L. R. Flori Co., St. Louis.
Unstated tonnage, 200 pieces, shore pipe, United States engineer, Savannah, Ga., to Welded Products Co., Birmingham, Ala., $2750, delivered.
Unstated tonnage, seamless steel tubing, Norfolk, Va., navy yard, to National Tube Co., on bid of $7154.84.

Cast Pipe Pending

560 tons, 4 to 8-inch, Parsippany-Troy project, New Jersey.

Steel Pipe Pending

335 tons, 4 to 12-inch class 150, San Clemente, Calif.; bids Aug. 20.
208 tons, cast iron water pipe specials, district commissioners, Washington; Lynchburg Foundry Co., Lynchburg, Va., low, $54.50 a ton delivered. Bids Aug. 5.
150 tons, 6-inch, Lynn Gas & Electric Co., Lynn, Mass.; bids in.

Unfilled Tonnage Down But Decline Is Slower

For the sixteenth consecutive month unfilled tonnage of the United States Steel Corp., as of July 31, declined, but the rate was only slightly over half that of a month earlier. Total tonnage on books July 31 was 1,966,302, a loss of 68,466 tons from June 30. Comparisons for 1931 and 1932 are as follows:

	Unfilled orders	Net change	Per cent change
1931			
Jan. 31	4,132,351	188,755+	4.78+
Feb. 28	3,965,194	167,157—	4.04—
Mar. 31	3,995,330	30,136+	0.73+
Apr. 30	3,897,729	97,601—	2.24—
May 31	3,620,452	277,277—	7.11—
June 30	3,479,323	141,129—	3.89—
July 31	3,404,816	74,507—	2.14—
Aug. 31	3,169,457	235,359—	6.91—
Sept. 30	3,144,833	24,624—	0.77—
Oct. 31	3,119,432	25,401—	0.30—
Nov. 30	2,933,891	185,541—	5.94—
Dec. 31	2,735,353	198,538—	6.77—
1932			
Jan. 31	2,648,150	87,203—	3.19—
Feb. 29	2,545,629	102,521—	3.88—
Mar. 31	2,472,413	73,216—	2.87—
Apr. 30	2,326,926	145,487—	5.88—
May 31	2,177,162	149,764—	6.44—
June 30	2,034,768	142,394—	6.54—
July 31	1,966,302	68,466—	3.36—

Strip

Volume of Inquiry Grows Less As Automotive Needs Diminish —One Fair Lot Pending in East

STRIP PRICES, PAGE 43

Pittsburgh—There may be a gain in tonnage the last of this month if some present inquiries develop. A large inquiry in the East for wide strip is reported to have been dropped as it hinged on prospective automobile body work. A few small hot-rolled strip orders were booked last week at 1.50c, Pittsburgh, but carload business commands 1.45c. Cold-rolled strip is quiet at 2.00c, Pittsburgh.

New York—Strip buying continues to lag, with hot-rolled untested at 1.45c, Pittsburgh, in carlots, and cold-rolled at 2.00c, Pittsburgh. Most inquiries are confined to lots of 50 tons or less, with sellers generally expecting little improvement before September.

Philadelphia — Strip inquiry is featured by an additional 300 tons for an eastern Pennsylvania consumer who already is in the market, as noted a fortnight ago, with a tentative inquiry for 350 tons of hot strip. The first inquiry was in connection with a container job for the government on which definite action is yet to be taken, but the latest inquiry is of a firm, definite character. Possibly another 300 tons may be required shortly. Prices on hot strip are unchanged at 1.45c, Pittsburgh, in car lots and cold-rolled, 2.00c, Pittsburgh.

Youngstown, O.—Strip steel users continue to moderate demands on valley mills. Narrow widths are more active than wide since the automotive decline has begun to be more apparent. Quotations in general continue stable.

Cleveland—Some small inquiries for strip have developed from miscellaneous stamping interests, but with automotive consumers practically out of the market volume is much lighter than in July. Prices are not being tested; for hot-rolled, 1.45c, base, Pittsburgh, is the usual figure; and for cold-rolled, 2.00c, base, Cleveland, though some makers outside this district recently have offered cold-rolled here at 1.90c.

Chicago—Strip specifications are declining gradually, reflecting reduced operations by automotive interests. Miscellaneous consumers show little change in requirements despite more favorable prospects for improved activity during September. Mill operations are lower, averaging about 10 per cent. Prices are unchanged but are tested only by small lots.

Operating Rate in Steel Holds Steady at 14-15

Pittsburgh—Steel output held at 16 per cent last week. This week the rate will be off fractionally to 15-16 per cent. The six active open hearths at the Edgar Thomson mill are now down. A leading interest here was operating at as high as 20 per cent for several days last week. Finishing mill schedules have been aided by the fact there have been more orders for immediate rolling. Eight out of 54 steelworks blast furnaces are blowing here, four belonging to the United States Steel Corp.

Operations, week ended Aug. 13	**14.5**
Operations, week ended Aug. 6	**14.5**
Operations, week ended July 30	**16.5**
Operations, one year ago	**32**
High for 1932, Feb. 6	**28.5**
Low for 1932—July 9	**12**

Philadelphia—Eastern operations are unchanged at 12 to 14 per cent.

Buffalo—Steelmaking operations here in the week ended Aug. 13 jumped eight points to 19 per cent, in accordance with staggered schedules. Republic lighted three open-hearth furnaces early in the week. For the week ended Aug. 20 a recession to 11 per cent is probable. Bethlehem is operating three open hearths and Wickwire Spencer one. Seneca Iron & Steel Co. is at 25 per cent.

Youngstown, O.—Steel plant operations here last week were off two points to 13 per cent, and little change from that level is anticipated. The Farrel, Pa., steel plant will be idle another week, and little change of ingot output is expected soon for valley independents. Sixteen of 83 district open hearths are melting.

Cleveland—Steel ingot production here for the week ended Aug. 13 declined to 12 per cent, the Otis Steel Co. dropping its two active open hearths, and the Corrigan, McKinney Steel Co. continuing with four, the only units active in this district. Operations for the current week are not likely to be changed from this level, the American Steel & Wire Co. deciding to further postpone resumption, though it had anticipated lighting some units Aug. 15.

Chicago—Resumption of operations at the South Works of the Illinois Steel Co. late last week brought average ingot production slightly above the rate of less than 10 per cent prevailing during the preceding week. With a full week's operation likely for the current week, the average for the period will advance to around 13 per cent. Blast furnace schedules also are higher with the blowing in of two stacks at South Chicago, giving the district eight active steelworks furnaces out of 36.

Birmingham, Ala.—Steelmaking operations continue unchanged at 21 per cent.

Bolt, Nut Activity Shows Signs of Betterment

Bolts, Nuts, Rivets Prices, Page 43

Pittsburgh—Small bolt and nut orders are increasing in number and this month will better July in shipments and sales. A bolt inquiry, largest in several months, to go into construction work is becoming active again. The price situation has not been changed and 75 off list continues for bolts and nuts. Large rivets are 2.25c.

New York—An order for 6000 bolts for the elevated floor of route 26, New Jersey state highway, between Jersey City and Newark, has been placed with a New Jersey producer. Bolts and nuts continue at 75 off list and rivets at 2.10c to 2.25c.

Cleveland—Rivet orders from miscellaneous plate fabricators have improved. No gains are noted in demand from railroads, though the latter constitute the larger proportion of sales. The market for bolts and nuts shows little change, but bolt manufacturers have been ordering more wire recently.

Chicago—Bolt, nut and rivet specifications are in unchanged volume and although producers look for no improvement this month, better activity is anticipated for September, if only for seasonal reasons. Jobbers have been slow to increase stocks but are expected to be better buyers upon any definite change in consumption, since the present level of stocks is based on the recent low rate of activity. Railroads remain poor buyers and orders from farm implement builders usually involve only small lots for repair work.

Raw Material Prices

Delivered pig iron prices subject to 10 per cent freight surcharge, maximum 13.44c gross ton, from Jan. 4

Pig Iron

Per Gross Ton

FOUNDRY, NO. 2

Chicago, furnace	$15.50
Pittsburgh, dist. fur.	15.00
Pittsburgh, delivered	15.63 to 16.13
Valley furnace	14.50 to 15.00
Cleveland fur., local del.	15.50
Philadelphia, delivered	13.76 to 14.26
Virginia furnace	17.25
Granite City, Ill., fur.	16.50 to 17.50
Buffalo, fur., local del.	16.00
Buff., all-rail, Boston	18.91 to 19.91
Buff., all-rail, Brooklyn	18.40 to 18.90
Buff., all-rail, Newark	16.78 to 17.28
Ala., Bir. fur., local del.	11.00
Ala., Nor. del., Bir. base	10.00
Alabama, del. Chicago	16.01
Alabama, del. St. L.	14.42
Alabama, del. Cincinnati	13.82
Ala., Phila., dock del.	15.00 to 15.25
Ala., Balt., dock del.	15.00
Alabama, New York dock	15.50
Ala., Boston dock del.	15.75 to 16.75
Tenn., Bir. base, local del.	13.00
Tennessee, del. Cinn.	13.82
Montreal, delivered	23.00 to 23.50
Toronto, delivered	22.10

FOUNDRY, NO. 2X

Buffalo, fur., local del.	16.50
Buff., all-rail, Brooklyn	18.90 to 19.40
Buffalo, all-rail, Newark	17.28 to 17.78
Buff., all-rail, Boston	19.91 to 20.91
Virginia furnace	17.75
Eastern, del. Phila.	14.26 to 14.76

FOUNDRY, NO. 1X

Buffalo fur., local del.	17.50
Eastern, del. Phila.	14.76 to 15.26

MALLEABLE

Valley furnace	14.50 to 15.00
Cleveland fur., local del.	15.50
Pittsburgh dis. fur.	15.00
Pittsburgh, delivered	15.63 to 16.13
Chicago, furnace	15.50
Buffalo fur., local del.	16.50
Eastern Penna., delivered	16.13 to 19.41
Granite City, Ill., fur.	16.50 to 17.50
Montreal, delivered	24.00
Toronto, delivered	22.60

BASIC

Pittsburgh, district fur.	14.50 to 15.00
Pittsburgh, delivered	15.13 to 16.13
Eastern Penn., del.	13.50 to 14.00
Buffalo fur., local del.	15.50 to 16.00
Montreal, delivered	23.50
Valley, furnace	14.00

BESSEMER

Valley furnace	14.50 to 15.00
Pittsburgh, furnace	15.00
Pittsburgh, delivered	15.63 to 16.13

LOW PHOS.

Valley fur., standard	25.00
Philadelphia, standard	23.76 to 26.79
Copper-bear., E. Pa. fur.	21.50 to 23.00

GRAY FORGE

Valley furnace	14.00
Pittsburgh district fur.	15.00
Pittsburgh, delivered	15.63 to 16.13

CHARCOAL

Lake Superior, del. Chicago	23.04

SILVERY

Jackson County, O., fur. in per cents: 6—$18; 7—$18.50; 8—$18.75; 9—$19; 10—$19.50; 11—$20; 12—$20.50; 13—$21.50; 14—$22.50; 15—$23; 16—$24; 17—$25.50.

Pittsburgh and Buffalo furnace: 7 to 10—$19.50; 15—$23 to $24.

BESSEMER FERROSILICON

Jackson County, O., fur., in per cents: 10—$20.50; 11—$21; 12—$21.50; 13—$22.50; 14—$23.50; 15—$24; 16—$25; 17—$26.50.

Coke

Prices Per Net Ton

Beehive Ovens

Connellsville furnace	$2.00 to 2.15
Connellsville foundry	3.00 to 4.25
New River foundry	6.00
Wise county foundry	4.25 to 5.00
Wise county furnace	3.50 to 4.25

By-Product Foundry

Newark, N. J., del.	8.21 to 8.81
Chicago, ovens, outside del.	7.00
Chicago, del.	7.75
New England, del.	10.00
St. Louis, del.	7.75
Birmingham, ovens	4.50
Indianapolis, del.	8.25
Ashland, Ky., ovens, Connell., basis	4.50
Portsmouth, O., ovens Connell., basis	4.50
Buffalo, ovens	7.50 to 8.00
Detroit, ovens	8.00
Philadelphia, del.	8.50

Iron Ore

LAKE SUPERIOR ORE

Gross ton, 51½%, Lower Lake Ports

Old range bessemer	$4.80
Mesabi bessemer	4.65
Old range nonbessemer	4.65
Mesabi nonbessemer	4.50
High phosphorus	4.40

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic, 56-63%, contract	7.50
Copper-free low phos. 58-65%	nom.

FOREIGN ORE

Cents per units, alongside docks Atlantic ports

Foreign manganiferous ore, 45-55% iron, 6-10% man.	8.50 to 9.00
North African low phos.	7.50 to 8.50
Swedish basic, 65%	7.50 to 8.00
Swedish low phos.	9.00
Spanish, North African basic, 50 to 60%	7.00 to 8.00
Newfoundland fdy., 55%	8.00
Tungsten, spot, short ton unit, duty paid	$10.25 to 10.50
Chrome ore, 48% gross ton c.i.f.	$17.00 to 18.00

Manganese Ore

Prices, not including duty, are cents per unit; cargo lots.

Caucasian, 52-55% (nom.)	24 cents
South African, 52%	22 to 23 cents
South African, 49-51%	21 to 22 cents
South African, 44-47%	20 to 21 cents
Indian, 48-50% (nom.)	22 cents
Brazilian, 46-48% (nom.)	18 cents

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. Works

First Quality

Pennsylvania, Ohio, Illinois, Kentucky, Maryland, Georgia, Alabama	$35.00
Missouri	35.00

Second Quality

Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland	25.00 to 30.00
Georgia, Alabama	30.00

SILICA BRICK

Pennsylvania	$35.00
Joliet and East Chicago	**47.00**
Birmingham, Ala.	50.00

MAGNESITE BRICK

Per Net Ton

Burned, 9 x 4½ x 2½	$61.50
Unburned, 9 x 4½ x 2½	52.00

CHROME BRICK

Per Net Ton

F.o.b. shipping point	$42.50

MAGNESITE

Dead burned grain, net ton, Chester, Pa., or Baltimore bases	38.00
Domes, Chewelah, Wash., base	20.90

Semifinished Steel

Prices Per Gross Ton

BILLETS AND BLOOMS

4 x 4-inch base

Pittsburgh, open-hearth	$26.00
Pittsburgh, bassemer	26.00
Youngstown	26.00
Cleveland	26.00
Philadelphia	31.75
Chicago	28.00
Forging, Chicago	33.00
Forging, Pittsburgh	33.00
Forging, Philadelphia	37.75

SHEET BARS

Pittsburgh	26.00
Youngstown	26.00
Cleveland	26.00
Chicago	28.00

SLABS

Pittsburgh	26.00
Youngstown	26.00
Cleveland	26.00

WIRE RODS

Pittsburgh, Cleveland	$37.00
Chicago	38.00

SKELP

All grades, Pittsburgh	1.50c to 1.60c

Ferroalloys

(In dollars, except Ferrochrome)

*Ferromanganese, 78-82%, tidewater, duty paid	$68.00
*Ferromanganese, del. Pittsburgh	73.24
Spiegeleisen, 19-20%, domestic fur. spot†	25.00
Ferrosilicon, 50 per cent, freight all., c. l.	77.50
Do, less carload	85.00
Do, 75 per cent	126.00 to 136.00
Silicomang., 2½% carb.	105.00
2% carbon	110.00
1% carbon	115.00
(The above for spot carlots. Contract price $5 a ton less).	
Ferrochrome, 60-70 chromium, 4-6 carbon, cts. lb. con. del.	10.00
Do, for spot delivery	10.50
Ferrotungsten, stand., lb. cont.	1.00 to 1.10
Ferrovanadium, 30-40 per cent, per lb. contained, on analysis	3.05 to 3.30
Ferrotitanium, c.l., prod. plant, frt. allow., net ton	137.50
Spot, 1 ton, frt., all., lb.	8.50
Do, under 1 ton	9.00
Ferrophosphorus, per ton, carload 17-19 per cent, Rockdale, Tenn., basis; 18%, $2 unitage	68.00
Ferrophosphorus, electrolytic per ton carload, 23-26% f.o.b. Anniston, Ala.; 24%, $4.25 unitage	91.00
Ferromolybdenum, stand. 50-60 per cent. per lb.	0.95
Cal. Molybdate, lb. cont.	0.80
Molybdate, lb. cont.	0.80

†Carloads. Differentials apply to quant.
*To users of carloads to 1000 tons annually. Differentials to large users.

Fluorspar

85 and 5 per cent grade

Washed gravel, f.o.b. Ill., Ky., net ton car loads	$12.00
Washed gravel, import duty paid tide, gross ton	19.50

Pig Iron

Sales and Inquiries Increase—9000 Tons Booked by Cleveland Interests—East More Active

PIG IRON PRICES, PAGE 50

Pittsburgh—Foundry iron demand is made up of a few cars a week, placed among the various furnace interests. Stocks in the hands of some producers still are large, but others have none. One of the Sharpsville, Pa., stacks may resume soon, and a merchant furnace in eastern Pennsylvania also will probably be blown in some time this month. High phosphorus pig iron for light castings is moved into this district occasionally from Birmingham, Ala., and recently several carloads were sold to foundry interests near here. A large radiator foundry has been stocking foundry coke preparing for an early resumption in the melt. The price of $15, Pittsburgh, for all grades is nominal in every instance but foundry.

Boston—Small-lot inquiry for pig iron is slightly better. Prices are unsettled, with low quotations noted in the Rhode Island district, especially where Dutch iron is reported at $15, delivered near Providence. Eastern Pennsylvania iron continues easy, with the local furnace and Buffalo makers striving to maintain recent levels. A small lot of foundry iron for Portsmouth, N. H., in the recent 145-ton navy order went at $21.70, delivered. For delivery to Charleston, S. C., the price was $16.95, delivered. This inquiry brought out weakness in southern iron, $9.50, furnace, being successful on 50 tons for the west coast.

New York — Little variation is noted in the light demand for pig iron of recent weeks. Buffalo foundry iron appears to be moving generally at $15, furnace, with eastern Pennsylvania iron at $13 to $13.50, furnace, and southern at $10, furnace.

Philadelphia—The best in many weeks, pig iron sales here total more than 7000 tons, practically all domestic iron. In addition, it is reported an eastern steel company has closed negotiations for continuance of its basic contract, requiring a round tonnage. This is the first noteworthy transaction in basic in considerable time. Meanwhile, prices on eastern Pennsylvania foundry iron have softened to a range of $13 to $13.50, furnace, with concessions on foreign competition. Basic has eased to $13.50 to $14, delivered eastern Pennsylvania, but is firm at this level. Virginia No. 2 plain has been reduced 25 cents to $17.25, furnace. A large eastern Pennsylvania manufacturer has contracted a year ahead for his requirements of special irons, not including foundry. Considerable hesitancy was noted among sellers in quoting this far in advance. Inquiries are noted here for 3000 tons of low phosphorus for a railroad supply foundry in western Pennsylvania and 500 tons for the American Steel Foundries, Indiana Harbor, Ind.

Cleveland—Inquiries for pig iron have increased to the largest aggregate noted for any week since last year. Lake furnaces are figuring on 5000 to 10,000 tons from foundries seeking to cover their prospective requirements for the remainder of the year. One inquiry calls for around 2000 tons; there are two from separate localities for 1000 tons each; several for 500 tons. Makers of agricultural implements are preparing for more activity. Actual sales in the week also increased substantially; sellers here reporting having booked 9000 tons for delivery over the remainder of the year. Prices are steady.

Buffalo—Pig iron sales and inquiries have improved. The inquiries range from carload lots to 100 and 200 tons, and most of them are being converted into sales.

Youngstown, O.—Several inquiries for pig iron have been received recently. Shipments are continuing in small lots. Furnace stockpiles do not appear to be increasing, due to the blowing out of stacks earlier in the year.

Chicago—While pig iron shipments show but slight change, new business is appearing in encouraging volume. Sales recently have been more numerous and several 500 to 1000-ton lots are included. A number of consumers who have been out of the market for several months are showing interest in additional supplies, despite the fact that actual operations are no better. The market is well maintained at $15.50, furnace,

Coke

Some Foundries, Preparing to Resume Operations, Place Orders—Domestic in Demand

COKE PRICES, PAGE 50

Pittsburgh—A fair sized shipment of by-product foundry coke was noted here last week when an important radiator foundry resumed operations. Beehive foundry coke is in light demand, and nominally is $4.25 a ton for the better grades. The $3 market on certain grades also is nominal. Furnace coke is moving slowly at $2 a ton generally, but some small orders have been placed at $2.15.

New York—Consumers of metallurgical coke continues to specify lightly. Beehive furnace coke is unchanged at $1.50 to $2, Connellsville, for heating purposes, and $2 to $2.15 for smelting. Beehive foundry coke is $2.75 to $4.25, western Pennsylvania ovens, depending upon analysis. By-product foundry coke is $8.21 to $8.81, delivered Newark, N. J.; $10, New England; $8.50, Philadelphia.

Cleveland — Inquiries for coke have picked up, those for domestic grades being especially brisk. Dealers are seeking protection at current prices for fall and winter deliveries.

Cincinnati — No improvement has been noted here this month in demand for by-product foundry coke. The price continues $8.09, delivered, Cincinnati. Prices on domestic coke remain unchanged this month, with no effect here so far from a price increase reported in the Indianapolis territory.

Chicago—Shipments of by-product foundry coke are slightly heavier than a month ago. The upturn has been insufficient to indicate any substantial increase in foundry operations. The market continues $7, ovens, for outside delivery. Signing of the new wage scale by Illinois coal union officials and operators will result in the immediate reopening of mines idle since April 1 and the reemployment of 25,000 or more workers.

St. Louis—Demand for metallurgical coke continues quiet, reflecting the low rate of operations at foundries here. Deliveries thus far this month have not averaged more than the low July rate. Offerings of southern coke are heavier, and becoming more of a factor here.

Birmingham, Ala.—Shipments are light, but an encouraging feature is that two or three consumers are getting ready to resume production. A little more than a third of the by-product ovens in this district are operating.

Scrap

Upward Trend Gains Impetus And Prices Advance — Small Supply Limits Future Selling

Chicago—Unwillingness of holders of scrap to sell at recent prices has resulted in another advance of 50 cents a ton on heavy melting steel, to $5.50 to $6. No additional buying by mills is noted, but an offer of $6 for Canadian shipment found no takers and dealers have increased their buying prices in picking up odd lots. The market currently is $1 a ton above its lowest level, while a number of other grades also are nominally higher. Cast iron borings have advanced sharply, releases against orders making it necessary for dealers to advance buying prices. A slight gain in demand among smaller consumers is noted while mills generally show no change in their purchases.

Boston—Scrap buying and inquiry is dull, especially for No. 1 melting

Iron and Steel Scrap Prices

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated

HEAVY MELTING STEEL

Birmingham	6.00 to 7.00
Boston, dealers	3.75 to 4.00
Buffalo, No. 1	6.50 to 7.00
Buffalo, No. 2	5.00 to 5.50
Chicago	5.50 to 6.00
Cleve., No. 1	6.00 to 6.50
Cleve., No. 2	5.50 to 6.00
Det., No. 1 deal.	4.50 to 5.00
Det., No. 2 deal.	3.00 to 3.50
E. Pa. del. mill	6.00 to 6.50
E. Pa., No. 2 del.	4.50 to 5.00
N. Y. deal. R. R.	2.85 to 4.00
N. Y. deal, No. 2	2.00 to 2.50
N. Y. deal. yd.	2.50 to 3.00
Pitts. No. 1	8.50 to 9.00
St. L. No. 1 sel.	5.50 to 6.00
Federal, Ill.	5.00 to 5.50
Granite City, Ill.	4.50 to 5.00
Valleys, No. 1	8.25 to 8.75

COMPRESSED SHEETS

Buffalo, dealers	5.00 to 5.50
Chi. (Factory)	3.50 to 4.00
Cleveland	6.00 to 6.50
Detroit, dealers	3.75 to 4.25
E. Pa. new mat.	5.00 to 5.50
Pittsburgh	7.25 to 7.75
Valleys	7.25 to 8.25

BUNDLED SHEETS

Buffalo	4.00 to 4.25
Cinci., del.	3.75 to 4.25
Cleveland	5.00 to 5.50
Eastern, Pa.	5.00
Pittsburgh	6.50 to 7.00
St. Louis	1.50 to 2.00

SHEET CLIPPINGS LOOSE

Chicago	2.00 to 2.50
Cincinnati	2.00 to 2.50
Detroit, dealers	1.50 to 2.00
St. Louis	1.50 to 2.00

STEEL RAILS SHORT

Birmingham	8.00 to 9.00
Boston, dealers	4.00 to 4.50
Buffalo	8.75 to 9.25
Chicago (3 ft.)	7.50 to 8.00
Chicago (2 ft.)	8.00 to 8.50
Cinci., deal.	8.00 to 8.50
Detroit, deal	7.00 to 7.50
Pitts. (open-hearth, 3 ft. and less)	10.00 to 10.50
St. Louis	7.50 to 8.00

STOVE PLATE

Birmingham	5.50 to 6.00
Boston, dealers	2.00 to 2.50
Buffalo	6.50 to 7.00
Chicago, net	5.00 to 5.50
Cinci., deal. net	3.25 to 3.75
Det., net deal.	2.50 to 3.00
Eastern Pa.	5.50 to 6.00
N. Y., deal. mill	2.50 to 3.00
St. Louis	5.50 to 6.00

COUPLERS, SPRINGS

Buffalo	9.00 to 9.50
Chicago	6.00 to 6.50
Eastern Pa.	7.50 to 8.00
Pittsburgh	8.50 to 9.00
St. Louis	6.00 to 6.50

ANGLE BARS—STEEL

Chicago	6.50 to 7.00
St. Louis	6.00 to 6.50

LOW PHOSPHORUS

Buffalo, billets and bloom crops	9.00 to 9.50
Cleveland bil. and bloom crops	9.00 to 10.00
Eastern Pa.	9.00 to 9.50
Pittsburgh billet bloom crops	10.50 to 11.00
Pitts., sheet bar crops	10.00 to 10.50

FROGS, SWITCHES

Chicago	5.50 to 6.00
St. Louis	6.00 to 6.50

SHOVELING STEEL

Chicago	5.50 to 6.00
Cleveland	6.25 to 6.50
St. Louis	4.50 to 5.00

RAILROAD WROUGHT

Birmingham	5.00 to 5.50
Boston, dealers	1.00 to 1.50
Buffalo, No. 1	4.25 to 4.75
Buffalo, No. 2	6.50 to 7.00
Cinci., No. 2	4.50 to 5.00
Chi., No. 1, net	4.00 to 4.50
Chicago, No. 2	5.50 to 6.00
Eastern, Pa.	6.00 to 6.50
N. Y., No. 1, deal.	2.50 to 3.00
Pitts., No. 2	8.50 to 9.00
St. Louis, No. 1	3.50 to 4.00
St. Louis, No. 2	4.50 to 5.00

SPECIFICATION PIPE

Boston	3.00 to 4.00
Eastern Pa.	7.00 to 7.50
N. Y., deal	2.00 to 2.25

BUSHELING

Buffalo, No. 1	5.00 to 5.50
Chicago, No. 1	4.00 to 4.50
Cinn., No. 1 dl.	3.75 to 4.25
Cinn., No. 2	2.25 to 2.75
Cleve., No. 2	4.00 to 4.25
Det., No. 1 new deal.	4.00 to 4.50
St. L., No. 1	3.00 to 3.50
Val. new No. 1	7.75 to 8.25

MACHINE TURNINGS

Birmingham	3.00 to 3.50
Boston, dealers	0.50 to 1.00
Buffalo	3.00 to 3.50
Chicago	2.50 to 3.00
Cin., deal.	2.75 to 3.25
Cleveland	2.50 to 3.00
Detroit	1.50 to 2.00
Eastern Pa.	3.00 to 3.50
N. Y., deal	1.35 to 1.50
Pittsburgh	5.25 to 5.75
St. Louis	1.50 to 2.00
Valleys	5.75 to 6.25

BORINGS AND TURNINGS
For Blast Furnace Use

Boston, dealers	.60 to .75
Buffalo	3.00 to 3.50
Cinn., deal.	2.75 to 3.25
Cleveland	2.50 to 3.00
Detroit, deal.	2.00 to 2.50
Eastern Pa.	3.00 to 3.50
N. Y., deal	1.35 to 1.50
Pittsburgh	5.25 to 5.75

CAST IRON BORINGS

Birming., chem.	12.50 to 13.00
Birming., plain	3.00 to 3.50
Boston, chem.	5.00 to 5.50
Boston, dealers	1.00 to 1.25
Buffalo	3.25 to 3.50
Chicago	3.25 to 3.75
Cinn., deal.	2.75 to 3.25
Cleveland	2.50 to 3.00
Detroit, deal.	2.00 to 2.50
Eastern Pa.	3.00 to 3.50
E. Pa., chem.	8.00 to 10.50
N. Y., deal.	1.00 to 1.50
Pittsburgh	5.25 to 5.75
St. Louis	2.75 to 3.25

PIPE AND FLUES

Cinn., deal.	3.00 to 3.50

RAILROAD GRATE BARS

Buffalo	4.00 to 4.50
Chicago, net	5.00 to 5.50
Cincinnati	3.50 to 4.00
Eastern Pa.	5.50 to 6.00
N. Y., deal.	3.50 to 4.00
St. Louis	4.50 to 5.00

FORGE FLASHINGS

Boston, dealers	2.00 to 2.50
Buffalo	4.00 to 4.50
Cleve. ov. 10 in.	6.50 to 7.00
Detroit	3.75 to 4.25

FORGE SCRAP

Boston, dealers	1.75 to 2.00
Chicago	6.50 to 7.00
Eastern Pa., del.	5.00 to 5.50

ARCH BARS, TRANSOMS

Chicago, net	4.50 to 5.00
St. Louis	5.00 to 5.50

AXLE TURNINGS

Boston, deal.	6.00 to 6.50
Buffalo	6.50 to 7.00
Chi., elec. fce.	4.00 to 4.50
Cleveland	5.00 to 5.50
Eastern Pa., del.	5.50 to 6.00
Pittsburgh, O. H.	7.00 to 7.50
St. Louis	3.50 to 4.00

STEEL CAR AXLES

Birmingham	8.50 to 8.75
Boston, ship. pt.	6.00 to 6.50
Buffalo	10.00 to 10.50
Chicago, net	7.00 to 7.50
Eastern Pa.	14.50
St. Louis	8.25 to 8.75

SHAFTING

Boston, ship. pt.	7.50 to 8.50
N. Y., deal.	6.50 to 7.00
St. Louis	7.50 to 8.00
E. Penna.	10.50 to 12.00

CAR WHEELS

Birming., iron	5.50 to 6.50
Boston, iron deal.	3.50 to 4.00
Buffalo, iron	7.00 to 8.00
Buffalo, steel	8.00 to 8.50
Chicago, iron	6.00 to 6.50
Chi., rolled steel	6.00 to 6.50
Cincinnati iron	6.00 to 6.50
E. Pa. steel	7.50 to 8.00
E. Pa. iron	8.00 to 8.50
Pitts., iron	8.50 to 9.00
Pitts., steel	8.50 to 9.00
St. Louis, iron	5.00 to 5.50
St. Louis, steel	5.00 to 5.50

NO. 1 CAST SCRAP

Birmingham	6.50 to 7.00
Buffalo (Mach.)	8.50 to 9.00
Buffalo, cupola	8.00 to 8.25
Boston, textile	7.00 to 7.50
Chi., mach. net	6.00 to 6.50
Chi., railroad, net	5.50 to 6.00
Chicago, agri., net	5.00 to 5.50
Cinn., mach. cup.	6.00 to 6.50
Cleve. cupola	6.50 to 7.00
Det., net deal.	6.50 to 7.00
E. Pa. cupola	9.00
N. Y., cup. deal.	5.00 to 6.00
N. Y., del. local foundries	7.50 to 8.00
Pitts., cupola	8.50 to 9.00
San Fran., del.	13.50 to 14.00
Seattle	5.00 to 7.50
St. L. No. 1 ma.	6.50 to 7.00
St. L., No. 1	6.00 to 6.50

HEAVY CAST

Boston, del.	3.25 to 3.50
Bost., mach. cast	7.00 to 7.50
Buffalo, break.	5.00 to 5.50
Cleve., break	3.50 to 4.00
Detroit, auto, net deal.	7.00 to 7.50
Det., break., dl.	3.75 to 4.25
Eastern Pa.	8.50
N. Y. No. 1, dl.	4.50 to 5.00
N. Y. break, dl.	4.25 to 4.75
Pittsburgh	7.75 to 8.25

MALLEABLE

Boston Consum.	6.00 to 6.25
Buffalo	7.50 to 8.00
Chicago, agri.	5.00 to 5.50
Chicago, R. R.	5.50 to 6.00
Cinci., R. R., del.	7.00 to 7.50
Cinci., agri. del.	6.50 to 7.00
Cleveland, rail	7.50 to 8.00
Det. auto deal.	5.00 to 6.00
St. Louis, rail	4.75 to 5.25

RAILS FOR ROLLING
5 feet and over

Birmingham	7.00 to 7.50
Boston, deal.	5.00 to 5.50
Buffalo	7.00 to 7.50
Chicago	6.50 to 7.00
Eastern Pa.	9.50
New York dealer	4.25 to 4.75
St. Louis	7.00 to 7.50

LOCOMOTIVE TIRES

Chicago, cut	7.00 to 7.50
St. L., No. 1	4.50 to 5.00

LOW PHOS. PUNCHINGS

Chicago	6.50 to 7.00
Buffalo	9.00 to 9.50
Eastern Pa.	9.50 to 10.00
Pittsburgh	9.00 to 9.50

steel which nominally continues at about $5, delivered, Central Massachusetts. Much of present demand is for water shipment with about 1000 tons of stove plate being bought at $3.50, dock, for New Jersey or Pennsylvania. New England delivery on No. 1 machinery cast ranges from $6.50 to $7.50.

New York—Advances of 50 cents or more in dealers' buying prices on several grades, including heavy and breakable cast, stove plate and No. 2 steel, are accompanied by heavier inquiry and sales for rail shipment. Some eastern Pennsylvania consumers, out of the market for weeks, have made fair inquiries.

Philadelphia—No. 2 heavy melting steel has advanced 50 cents a ton, and heavy breakable cast, about 25 cents a ton. Iron axles, on the other hand, have been marked down $1. Scattered buying includes 200 tons of heavy breakable cast for a Coatesville, Pa., consumer. While shipments of stove plate and some other grades have been coming from New England and New York by barge for some time the first barge shipment of No. 2 heavy melting steel came by barge from New York recently.

Buffalo—A large consumer has just come into the market for a considerable tonnage of stove plate. It is understood that the price paid was $6.50. This material and other grades of scrap are being held more firmly and dealers are hopeful of a better market. One dealer is declining to quote on any commodity pending the development of the present situation. One of the larger consumers is expected to come into the market soon for No. 2 heavy melting steel.

Pittsburgh—Because of a lack of supply rather than buying by steel mills, the market has shown considerable strength in some grades. No. 1 heavy melting steel is up 50 cents a ton at $8.50 to $9 on the basis of a sale last week into a nearby steel plant of the 2550 tons offered by the Pennsylvania railroad. This was bought by dealers at just under $8.75 and sold at approximately $9, delivered. The Pennsylvania railroad's 8000 tons of scrap rails were not sold.

Cleveland—With absence of buying and with shipments to melters held at a minimum, steel and iron scrap quotations here have not been advanced. It is expected next sales will reflect strength shown in other centers.

Detroit—An upturn in steel and iron scrap is in evidence and 50 cents to $1.50 has been added to the more active grades. This results from inquiries from practically all consuming districts in the face of light production. This rise is accompanied by great strength. Dealers find difficulty in obtaining even carloads to fill their orders.

Cincinnati—Prices of iron and steel scrap are nominally unchanged, although dealers avoid tonnage commitments at present prices. Several inquiries have come out, one for an unstated tonnage of blast furnace material.

St. Louis—Barring a marked turn for the better in sentiment and a slight stiffening in certain grades, the market for iron and steel scrap shows little change. The continued low rate of open-hearth operations is a dampe ron all steel items.

Birmingham, Ala.—Steel and iron scrap is not stronger. Prices are low and weak and a minimum tonnage is moving. Consumers of heavy melting steel are purchasing only for immediate needs.

Toronto, Ont.—Demand for iron and steel scrap shows no change. Consumers are picking up machinery cast and odd lots of malleable and stove plate but otherwise show little interest. Canadian interests are importing both iron and steel grades from the United States.

Lake Erie Iron Ore Dock Balance Reduced

Iron Ore Prices, Page 50

Cleveland—Iron ore receipts at Lake Erie ports for July totaled 470,420 tons, compared with 3,191,156 tons in the month last year, according to the Lake Superior Iron Ore association. Receipts at other lake ports amounted to 77,941 tons, against 1,734,710 tons last year. No ore was received during the month at Erie, Pa., Indiana Harbor, or Gary, Ind. Shipments from Lake Erie ports were 428,457 tons, leaving a dock balance of 5,298,383 tons, Aug. 1. Last year the dock balance was 5,365,693 tons.

Ferroalloy Shipments Continue at Low Level

Ferroalloy Prices, Page 50

Ferromanganese and spiegeleisen specifications are in line with continued light steelmaking operations, with prices unchanged at $68, duty paid, for ferromanganese, and $25 for 19 to 21 per cent spiegeleisen. Orders for some ferroalloys from smaller users in the Chicago district are slightly more numerous.

Semifinished Sales Light; Prices Are Steady

Semifinished Prices, Page 50

Demand for sheet bars, billets and slab is restricted to small lots. Offerings of off-heat billets have diminished, prime material making a better showing. Prices hold at $26, base, Pittsburgh, Youngstown, O., and Cleveland, for sheet bars, billets and slabs.

Warehouse Trade Shows Some Signs of Gain

Warehouse Prices, Page 56

New York—Mill prices on sheets to jobbers are steadier, several having withdrawn recent lower quotations. Some jobbers report a slight gain thus far this month, while others note little change from the July rate.

Philadelphia—Another dull week is noted in the local jobbing market. Resellers generally see little likelihood of improvement before next month. The only interesting development in price is the action of some mills in allowing jobbers $2 on galvanized and $1 on black sheets for direct mill shipments in car lots to jobbers' customers.

Pittsburgh—Steel products moved from warehouses last week at a much better rate than in July. One interest billed more tonnage in the week than in all of July. Prices are unchanged.

Cleveland—Small ordering improved slightly during the week, but warehouses have not found it necessary recently to augment their stocks. Prices are steady.

Detroit — While the volume of warehouse business remains unchanged, the market has been brightened by the better sentiment manifest in other iron and steel markets. There is more hope for a pick up in the fall, and in some cases the tone of orders has been a little improved.

Cincinnati—Ordering from warehouses this month has been at the low rate of June and July, with only slight hopes for early results from a considerable number of inquiries on public works. Prices are unchanged.

Chicago—Sales recently have been better maintained than usual during the early part of the month, but show slight change since July. Warehouses look for some improvement over the next four to six weeks.

St. Louis—Business of iron and steel warehousemen is somewhat spotty, but thus far in August has registered a moderate gain over the like period in July.

Nonferrous Mill Products

Base price cents per pound f.o.b. mill except otherwise specified. Copper and brass product prices based on 5.75c, Conn., for copper

Sheets	
Yellow brass (high)	12.00
Copper, hot rolled	14.87½
Lead sheets, cut, to jobbers	6.50
Zinc sheets (100-lb. base)	9.00
Tubes and Pipes	
Seamless yellow brass (high)	15.25
Seamless copper	14.37½
Rods	
Yellow brass (high, full turnings)	9.75
Naval brass	10.87½
Anodes	
Copper untrimmed	11.75
Wire	
Yellow brass (high)	12.00

Old Metals

Dealers' buying prices, cents lb. No. 1 Composition Red Brass

New York	2.50 to 2.75
Chicago	2.25 to 2.50
Cleveland	2.75 to 3.00
St. Louis	2.25
Heavy Yellow Brass	
New York	1.62½ to 1.75
Heavy Copper and Wire	
New York	3.50 to 3.75
Chicago, No. 1	3.12½ to 3.37½
Cleveland	3.00 to 3.25
St. Louis	2.75
Composition Brass Borings	
New York	2.25 to 2.50
Yellow Brass Tubing	
Cleveland	1.75 to 2.00
Light Copper	
New York	2.75 to 3.00
Chicago	2.25 to 2.50
Cleveland	2.50 to 2.75
St. Louis	2.25
Light Brass	
Chicago	1.12½ to 1.37½
Cleveland	1.00 to 1.25
St. Louis	1.25
Lead	
New York	2.00 to 2.25
St. Louis	1.75 to 2.00
Zinc	
New York	1.00 to 1.12½
Cleveland	1.00 to 1.12½
St. Louis	1.00
Aluminum	
Clippings, new, soft, Cleve.	8.50 to 9.00
Clippings, hard, Cleveland	6.00 to 6.50
Borings, Cleveland	2.50 to 3.00
Mixed cast, Cleveland	3.25 to 3.50
Mixed cast, St. Louis	2.50 to 3.00

Secondary Metals

Remelt, aluminum No. 12	7.00 to 8.00
Brass ingots, 85-5-5-5	5.75

Metals

Continued Business Optimism Reflected in Market—Copper and Tin Advance—Zinc Quiet

New York—Continued optimism regarding business in general was reflected in the metal market last week. Prices maintained firmness although demand was in smaller volume than in the preceding week.

Copper—Prices moved gradually upward during the week with most sellers asking 5.50c, Connecticut. A few, however, still were willing to book business through the end of the year at 5.37½c. Consumers displayed little interest in the market, in fact, not enough to absorb the metal at 5.37½c. Consumptive needs apparently are well covered for the immediate future. Domestic stocks, placed at around 470,000 tons, are reported in strong hands, which is a factor for continued strength in the market.

Zinc—Sales of zinc last week were somewhat less than the 4000 tons placed in the preceding period. The market appeared decidedly quiet after midweek with some sellers asking 2.80c, reducing their price 5 points. Business done for the week was at an average of approximately 2.77½c, East St. Louis. Zinc stocks gained last month due to a sharp drop in shipments despite further curtailment of production.

Lead—Demand was only moderately active during the week but prices were maintained firmly at recent levels of 2.95c, East St. Louis, and 3.10c, New York. Sales for August shipment to date total about 22,000 tons with in the neighborhood of 3000 tons yet to be purchased. Good business also has been done for September shipment.

Tin—Tin prices established a new high for 1932 during the week, reaching the 23-cent level. Fair sales were made but strength was due principally to the general upturn in the London market.

Aluminum—Sales were light with prices unchanged.

Silver—Speculative buying brought an advance in commercial bars to 30.00c an ounce Thursday.

Antimony—Prices advanced fractionally on reports of a more satisfactory situation in China. Dema continued quiet, however.

Distillates Firm on Reduced Production

New York—Current production of distillates is moving direct to consumers, and though demand is light there is no accumulation of material. Continued small output tends to firm prices. Demand for naphthalene is mainly for small fill-in lots. Prices are unchanged. Phenol buying is routine. Sulphate of ammonia is dull and prices are unsettled by foreign offerings.

Coke By-Products

Per Gallon, Producers' Plants, Tank Lots

	Spot
Pure benzol	$0.20
90 per cent benzol	0.20
Toluol	0.30
Solvent naphtha	0.26
Commercial xylol	0.26

Per Pound at Producers' Plants in 250-Pound Drums

Phenol	0.153 to 0.173

Per Pound at Producers' Plants

Naphthalene flakes	3.75 to 4.75
Naphthalene balls	4.75 to 5.75

Per 100 Pounds Atlantic Seaboard

Sulphate of ammonia	$0.85 to $0.90

Quicksilver Weaker

New York—A few sellers report a fair improvement in orders for quicksilver, but price cutting is apparent, with large lots quoted around $48, a virgin flask. Small lots remain obtainable at $49, a flask of 76 pounds, and single flasks can be had in some instances at $50.

Nonferrous Metal Prices of the Week, Cents a Pound

	Copper			Straits Tin		Lead	Lead	Zinc	Aluminum		
	Electro delivered	Lake delivered	Casting refinery	New York Spot	New York Futures	N. Y.	East St. L.	St. L.	98-99%	Spot Antimony	Ingot Nickel
Aug. 6	5.37½	5.62½	5.12½	22.37½	22.75	3.10	2.95	2.75	22.90	5.00	35.00
Aug. 8	5.45	5.62½	5.20	22.45	22.82½	3.10	2.95	2.75	22.90	5.00	35.00
Aug. 9	5.45	5.62½	5.20	22.65	22.95	3.10	2.95	2.77½	22.90	5.00	35.00
Aug. 10	5.37½	5.62½	5.12½	22.87½	23.20	3.10	2.95	2.77½	22.90	5.12½	35.00
Aug. 11	5.37½	5.62½	5.12½	23.00	23.30	3.10	2.95	2.75	22.90	5.12½	35.00
Aug. 12	5.37½	5.62½	5.12½	23.00	23.30	3.10	2.95	2.75	22.90	5.25	35.00

Pacific Coast

Sentiment Makes Better Situation but Orders Fail To Increase —Structurals Most Active, with Bridges and Highways Taking Most—Pipe Needs Being Kept Down to Low Mark

San Francisco—(*By Air Mail*)—While few awards of size were reported general business sentiment is more cheerful and an increase volume of business is expected. Bids will be called soon on 1500 tons of reinforcing bars for the Pine Canyon dam, Pasadena, Calif.

Only two concrete bar awards were reported placed. Unnamed interests took 113 tons for highway work in Alameda county, Calif., and 100 tons for a hospital at El Centro, Calif. Opening of bids on 1237 tons for a breakwater at Santa Monica, Calif., have been delayed from Aug. 5 to Aug 12. Bids have been opened on 223 tons for highway work in Los Angeles county. Bids will be called for at once for 150 tons for an addition to Kern County hospital, Bakersfield, Calif. Los Angeles and San Francisco out-of-stock prices are firm at 2.50c, base, on carload lots. Prices on bars remain unchanged at 2.00c, c.i.f.

Structural shape awards exceeded 1400 tons. Pacific Fruit Express Co., San Francisco, placed 240 tons for underframes with an unnamed interest. Fair Mfg. Co. took 130 tons for alterations to the Mills building, San Francisco. Judson-Pacific Co. took 150 tons for cell work at San Quentin, Calif. Bids have opened on 944 tons for a medical school in San Francisco and on 525 tons for a bridge over the Merced river in California. Bids have also been opened on 150 tons of H columns for piers for the Casitas Oil Co., Los Angeles, and on 223 tons for a bridge over Paradise creek, San Joaquin county, California. New inquiries include 350 tons for cell work at San Quentin, bids on which open Aug. 16. No change in prices has occurred, wide flange material being firm at 2.20c, c.i.f. and shapes 2.10c.

Moore Drydock Co., Oakland, Calif., has secured a subcontract for fabrication of two derrick barges for the navy department from R. W. Kaltenbach Corp., Bedford, O., involving 1000 tons of plates and shapes.

Sales Await Financing

Seattle—While there is no actual improvement in demand optimism is more prevalent and the future is awaited with confidence. Many large projects are ready for action as soon as financial support is assured.

Mill prices have not advanced but the market is firm, structurals and bars at 2.10c, wide flange shapes, 2.20c and plates 2.00c. There has been no recession for some time and a rise would not be unexpected. Cast iron pipe is slightly higher, due to increased cost of materials.

Awards this week were small and include 150 tons of reinforcing for two highway jobs in Oregon, taken by unstated interests. The Seattle office of the American Cast Iron Pipe Co., Birmingham, Ala., booked 350 tons of cast iron pipe as follows: 150 tons, 6-inch for Puyallup, Wash., three low bids being extremely close; 145 tons 16-inch for Blaine, Wash., and 60 tons 6-inch for Three Tree Point, Wash. Several other municipal specifications are pending.

Steel in Europe

British Orders Scarce—Iron, Steel Production Off

London—(*By Radio*)—Orders for steel and iron are scarcer and anxiety is felt. Exports of pig iron from Middlesbrough are negligible. Midland works have been closed for the midsummer holidays and the immediate outlook is unpromising. Canada is the steadiest steel buyer among foreign nations. A shipment of 6000 tons of steel has been made to Russia and a contract has been booked for rails and track fastenings for China.

Estimated production of pig iron for July is 289,000 tons from 57 stacks, a daily rate of 9322 tons. This compares with 311,400 tons in June. Estimated steel production was 426,500 tons with 459,300 in June.

The Continent reports export demand slackening. A French plant has started a mill for the production of automobile sheets. Reports from Germany are that South Africa has ordered 30,000 tons of steel from Japan. Poland continues to book orders of steel for delivery to Russia.

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, August 11

Export Prices f.o.b. Ship at Port of Dispatch—By Cable (or Radio)

	British gross tons U. K. ports		Continental Channel or North Sea ports, metric tons Gold parity, $4.8665	
PIG IRON		£ s d		£ s d L s d
Foundry, 2.50-3.00 Silicon	$10.21	2 18 6	$ 8.75 to 9.23	1 16 0 to 1 18 0
Basic bessemer	9.41	2 14 0*	6.80 to 7.29	1 8 0 to 1 10 0
Hematite, Phos. .03-.05	10.64	3 1 0	.....	.....
SEMIFINISHED STEEL				
Billets	$17.01	4 17 6	$9.23	1 18 0
Wire rods, No. 5 gage	26.18	7 10 0	21.87	4 10 0
FINISHED STEEL				
Standard rails	$27.05	7 15 0	$26.73	5 10 0
Merchant bars	.96c	6 2 6	.47c	2 3 0
Structural shapes	1.15c	7 7 6	.44c to .45c	2 0 0 to 2 1 0
Plates, †¼ in. or 5 mm	1.37c	8 15 0	.56c to .57c	2 11 0 to 2 12 0
Sheets, black, 24 gage or 0.5 mm.	1.25c	8 0 0	1.11c to 1.17c	5 1 0 to 5 6 0
Sheets, gal., 24 gage, corr.	1.48c	9 10 0	1.46c	6 12 6
Bands and strips	1.21c	7 15 0	.66c to .69c	3 0 0 to 3 2 6
Plain wire, base	1.48c	9 10 0	1.18c	5 7 6
Galvanized wire, base	1.79c	11 10 0	1.38c to 1.40c	6 5 6 to 6 7 6
Wire nails, base	1.72c	11 0 0	1.21c	5 10 0
Tin plate, box 108 lbs.	$ 2.61	0 15 0	$3.20	0 13 2

British ferromanganese $68 delivered Atlantic seaboard, duty-paid. German ferromanganese £9 0s 0d ($43.74) f.o.b.

Domestic Prices at Works or Furnace—Last Reported

	£ s d	French Francs		Belgian Francs		Reich Marks
Fdy. pig iron, Si. 2.5	$10.21	2 18 6	$ 8.23	210(2)	$ 8.62	310	$16.43	69
Basic bessemer pig iron	9.41	2 14 0*	6.86	175(1)	6.95	250	17.98	75.50
Furnace coke	2.27	0 13 0	4.86	124	3.34	120	4.57	19.20
Billets	17.45	5 0 0	14.50	370	9.57	355	22.99	96.50
Standard rails	1.31c	8 7 6	1.25c	697	1.57c	1,210	1.37c	127
Merchant bars	1.03c	6 12 6	.95c	530	.56c	430	1.19c	110
Structural shapes	1.37c	8 15 0	.99c	550	.53c	410	1.16c	107.50
Plates, †¼-in. or 5 mm.	1.40c	9 0 0	1.17c	650	.67c	515	1.37c	127
Sheets, black	1.29c	8 5 0§	1.44c	800‡	.86c	665‡	1.56c	144‡
Sheets, galv., corr., 24 ga. or 0.5 mm.	1.48c	9 10 0	2.83c	1,570	1.78c	1,370	4.00c	370
Plain wire	1.48c	9 10 0	2.03c	1,130	1.95c	1,500	1.92c	178
Bands and strips	1.48c	9 10 0	1.04c	580	.86c	660	1.37c	127

*Basic. †British ship-plates, Continental, bridge plates. §24 ga. ‡1 to 3 mm. basis price.
British quotations are for basic open-hearth steel. Continental usually for basic-bessemer steel.

Steel, Wrought and Cast Iron Pipe, and Tubing

Welded Iron, Steel Pipe

Base Price $200 Ton

Base Discounts on steel pipe, Pittsburgh and Lorain, O., to jobbers in carloads. Indiana Harbor, Ind., and Evanston, Ill., 2 points less. Chicago del., 2½ points less. Wrought pipe, Pittsburgh base.

BUTT WELD

	Steel			Iron	
In.		Blk.	Gal.	Blk.	Gal.
½		58	44½	25	7
¾		62	50½	30	13
1—3		64	52½	33	17
1½—2				37	20

LAP WELD

2	57	45½	25	11
2½—6	61	49½	2½—3½ ..30	15
7—8	58	45½	4—6	19
9—10	56	43½	7—8	18
11—12	55	42½	9—12	13

BUTT WELD

Extra strong, plain ends

½	55	44½	¼ & ⅜	+11 +46
¾	60	49½	½	25 9
1—1½	62	51½	¾	30 14
2—3	63	52½	1—2	36 20

LAP WELD

Extra strong, plain ends

2	55	44½	2	31 15
2½—4	59	48½	2½—4	36 22
4½—6	58	47½	4½—6	35 21
7—8	54	41½	7—8	33 19
9—10	47	34½	9—12	23 10
11—12	46	33½		

To large jobbers these discounts on steel pipe increased on black by 1 point and two discounts of 5 per cent; on galvanized by 1½ points with two 5 per cents. Direct mill shipments, base, 5 and 2½. On iron pipe large jobbers obtain additional discount of 1 point with 5 and 2½ per cent on black and galvanized.

BOILER TUBES

Carload discounts, f.o.b. Pittsburgh

Lap Welded Steel		Charcoal Iron	
2—2¼	38	1¾	8
2½—2¾	46	2—2¼	13
3	52	2½—2¾	16
3¼—3¾	54	3	17
4	57	3¾—3½	18
4½—6	46	4	20
1½	1	4½	21

On lots of a carload or more, above base discounts subject to preferential of two 5 per cent discounts on steel and 10 per cent on charcoal iron. Smaller quantities subject to following modifications from base discounts.

Lap Welded Steel—Under 10,000 pounds, 6 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and two 5 per cents. Charcoal Iron—under 10,000 pounds, 2 points under base; on 10,000 pounds to carload, base and one 5 per cent.

STANDARD COMMERCIAL SEAMLESS BOILER TUBES

COLD DRAWN

1 inch	61	3	46
1¼—1½	53	3¼—3½	48
1¾	37	4	51
2—2¼	32	4½, 5, 6	40
2½—2¾	40		

HOT ROLLED

2—2¼	38	3¼—3½	54
2½—2¾	46	4	57
3	52	4½ 5, 6	46

Subject to 5 per cent supplementary discount for carload lots. On less than 10,000 pounds, base discount reduced 6 points. On 10,000 pounds to carload, base discount reduced 4 points and one 5 per cent allowed. No extra for lengths up to and including 24 feet. Sizes smaller than 1 inch and lighter than standard gage to be held at mechanical tubes list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Tubing

Cold drawn; f.o.b. mill discounts

Random lengths over 5 ft. 55%
Selected lengths, 1—18 ft. 53%

Cast Iron Water Pipe

Class B Pipe—Per Net Ton

Six-inch and over, Bir. ....$32.00 to 33.00
Four-inch, Birmingham .... 36.00 to 37.00
Four-inch, Chicago ..... 38.40 to 42.40
Six to 24-inch, Chicago..... 34.40 to 38.40
Six-inch and over, N. Y... 30.00 to 32.50
Four-inch, New York ..... 34.50 to 36.50
Stand. fittings, Bir. base.... $100.00

Six to 24-inch, base; over 24-inch plus $20; 4-inch, plus $10; 3-inch plus $20; gas pipe fittings, $5 higher. Class A pipe $4 higher than Class B.

Warehouse Quotations at Leading Centers, in Cents Per Pound

(All Philadelphia prices subject to quantity differentials except reinforcing and Swedish bars)

STEEL BARS

Baltimore	2.75c
Boston	3.25c
Buffalo	2.95c
Chattanooga	3.00c
Chicago	2.75c
Cincinnati	3.00c
Cleveland	2.75c
Detroit	2.85c
Houston	2.65c
Los. Ang.	3.30c
New York‡(d)	3.10c
Philadelphia	2.45c
Pittsburgh	2.60c
Portland	3.00c
San Fran.	3.25c
Seattle	3.00c
St. Louis	3.00c
St. Paul	2.85c
Tulsa	3.25c

IRON BARS

Baltimore	2.75c
Boston	3.25c
Buffalo	3.15c
Chattanooga	3.00c
Chicago	2.75c
Cincinnati	3.00c
Detroit	2.85c
New York‡(d)	3.10c
Philadelphia	2.45c
St. Louis	3.00c
Tulsa	3.25c

REINFORC. BARS

Baltimore	2.35c-3.00c
Boston	3.10c-3.25c
Buffalo	2.95c
Chattanooga	3.00c
Cincinnati	3.00c
Cleveland	2.10-2.25c
Detroit	2.85c
Houston	3.00c
Los. Ang. cl.	2.10c
Los Ang., lcl	2.40c
New York	2.65c-3.10c
Phila.	2.26½c
Pittsburgh	2.60c
San Fran. cl.	2.50c
San Fran. lcl	2.80c
Seattle	3.00c
St Louis	3.15c
Tulsa	3.25c
Young.	2.30c-2.60c

SHAPES

Baltimore	2.75c
Boston	3.35c
Buffalo	3.20c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland	2.95c
Detroit	3.10c
Houston	3.25c
Los. Ang.	3.30c
New York(d)	3.10c
Philadelphia	2.45c
Pittsburgh	2.85c
Portland	3.00c
San Fran.	3.15c
Seattle	3.00c
St. Louis	3.25c
St. Paul	3.25c
Tulsa	3.50c

PLATES

Baltimore	2.75c
Boston	3.35c
Buffalo	3.20c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland, ¼-in. and thicker	2.95c
Clev., 3/16-in.	3.20c
Detroit	3.10c
Det., 3/16-in.	3.10c
Houston	3.00c
Los Angeles	3.30c
New York(d)	3.30c
Philadelphia	2.45c
Phila. floor	5.10c
Pittsburgh	2.85c
Portland	3.00c
San Fran.	3.25c
Seattle	3.00c
St. Louis	3.25c
St. Paul	3.25c
Tulsa	3.50c

NO. 10 BLUE

Baltimore	3.25c
Boston	3.50c
Buffalo	3.45c
Chattanooga	3.50c
Chicago	3.20c
Cincinnati	3.30c
Cleveland	3.00c
Detroit	3.35c
Houston	3.35c
Los Ang.	3.60c
N. Y.	3.00c
Portland	4.00c
Phila.*† (e)	2.90c
Pitts.**	3.00c
San Fran.	3.50c
Seattle	4.00c
St. Louis	3.45c
St. Paul	3.45c
Tulsa	3.70c

NO. 24 BLACK

Balt.*†	3.50c
Boston	4.20c
Buffalo	3.70c
Chattanooga	3.65c
Chicago	3.55c
Cincinnati	3.75c
Cleveland	3.25c
Detroit	3.50c
Los Ang.	4.20c
New York	3.75c-4.00c
Phila.*†(e)	3.40c
Pitts.**	3.40c
Portland	4.50c
San Fran.	4.05c
Seattle	4.50c
St. Louis	3.80c
St. Paul	3.695c
Tulsa	4.75c

NO. 24 GAL. SHEETS

Balt.*†	4.00c
Boston	4.75c
Buffalo	4.05c
Chattanooga	3.95c
Chicago	4.10c
Cincinnati	4.25c
Cleveland	3.75c
Detroit	3.75c
Houston	4.25c
Los. Ang.	4.50c
New York	4.00c-4.10c
Phila.*†(e)	3.75c
Pitts.**	3.90c
Portland	5.00c
San. Fran.	4.55c
Seattle	5.00c
St. Louis	4.35c
St. Paul	4.19c
Tulsa	5.10c

***BANDS**

Baltimore	3.25c
Boston	3.75c
Buffalo	3.30c
Chattanooga	3.20c
Chicago	2.95c
Cincinnati	3.20c
Cleveland	3.00c
Det. 3/16-in. & lighter	3.15c
Houston	3.65c
Los Ang.	3.80c
New York(d)	3.30c
Philadelphia	2.75c
Pittsburgh	2.95c
Portland	3.50c
San Fran.	3.65c
Seattle	3.50c
St. Paul	3.20c
Tulsa	3.45c

***HOOPS**

Baltimore	3.25c
Boston	4.90c
Buffalo	3.95c
Chicago	3.50c
Cincinnati	3.75c
Cleveland	3.65c
Det. No 14 & lighter	3.30c
New York	3.30c
Philadelphia	3.00c
Pittsburgh	3.60c
Seattle	5.00c
St. Paul	3.75c

*New extras apply.

COLD FIN. STEEL

Rounds & Hexagons

Baltimore (c)	3.30c
Boston	3.60c
Buffalo	3.00c
Chattanooga*	3.68c
Chicago	3.00c
Cincinnati	3.32c
Cleveland	2.95c
Detroit	3.15c
Los Ang. (a)	4.25c
New York	3.39c
Philadelphia*	3.35c
Pittsburgh	2.95c
Portland (a)	4.50c
San Fran.(a)	4.25c
Seattle (a)	4.50c
St. Paul (a)	3.20c
St. Louis	3.36c
Tulsa	4.65c

Flats and squares 50c extra, except Tulsa, where 5.14c is quoted. (a) Rounds, hex, only.

COLD ROLL. STRIP

Boston 0.100 in., 500 lb. lots	5.30c
Buffalo	5.25c
Chicago (soft) (b)	5.65c
Cincinnati	5.80c
Cleve. (b)	5.55c
Detroit	5.40c
Phila. (c)	4.55c
New York	4.55c

(b) Net base straightening, cutting, boxing 1 ton or more.

(c) Plus mill, size and quantity extras.

(d) Minus quant. diff.

(e) New. mill classif.

‡Domestic bars.

*Plus quan. extras.

**Less than 25 sheets.

*†50 or more bundles.

Equipment

Hopes Buoyant, but Look for Orders to Be Deferred

New York—While general sentiment has improved, this has not been reflected in any noticeable gain in equipment orders. Some dealers report inquiry slightly improved, but most agree that machinery and equipment builders will be among the last to benefit from general improvement. Government inquiry continues to come out weekly and awards are being made on considerable equipment, bids having been opened during the last month or six weeks.

Worcester, Mass—Pronounced increased activities in several New England industries, notably textiles, has failed to influence materially the metalworking industries and builders of equipment. At least two textile machine builders in the central Massachusetts district note a better demand for repair parts. Another shop is selling more grinding wheels while a third is reported to have shared in recently placed Russian business. There is a better feeling generally, but machinery builders expect to be among the last to join the upward trend now applicable to other lines.

Pittsburgh—Steel mill equipment was slightly less in volume last week but there was a fairly good improvement in inquiry for small machine tools. A few individual tools were closed on. Leading new inquiry for steel mill equipment is one for a 3-high mill for the Youngstown Sheet & Tube Co., Youngstown, O. This same interest placed an order for several furnaces for its Indiana Harbor, Ind., works last week with a Toledo, O., builder.

Cleveland—Despite fair volume of inquiry for steel plant equipment and machinery being built up, decision to go ahead with placing the business is lacking. Funds are available in many cases for new equipment, as well as the need for it, but the mental hazard still obstructs tangible improvement.

Chicago—Though sales of machine tools and plant equipment continue at a quiet rate, inquiry has improved moderately and users are displaying more interest in new equipment than for sometime. Sellers anticipate but slight change in actual orders prior to a definite upturn in industrial operations, but believe the recent betterment in sentiment will be conducive to increased purchases in the near future. Machine tool orders usually are confined to individual items. Extremely low prices prevail on auction sales of used equipment.

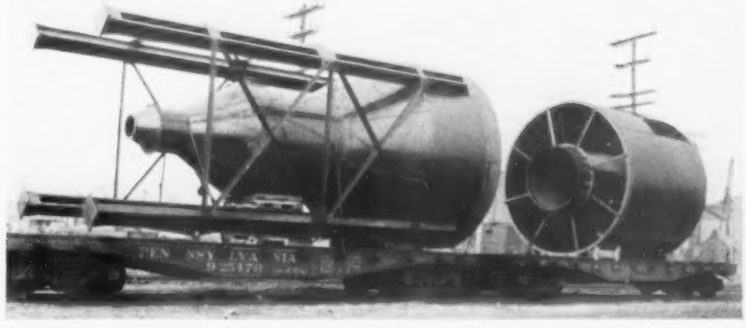
New Trade Publications

AIR SEPARATOR—Leavitt Machine Co., Orange, Mass., has prepared a catalog on its automatic separators for removing moisture and oil from compressed air. It includes information on the principle of operation, suggestions for separators, proper installation of equipment and illustrations of the various types. Automatic receiver drains also are described.

STEEL FOUNDERS' DIRECTORY—Steel Founders' Society of America Inc. has issued its directory for 1932-33, including all manufacturers of steel castings and of heat and corrosion-resistant castings in the United States and Canada. It contains an alphabetical list of firms with names of officials, type and size of castings produced, melting equipment, number of employes.

GRAVER

STEEL PLATE



Dust Collector Built to Specification for Large Steel Company

Special Fabrication

Graver manufacturing and fabricating facilities are unexcelled while production costs are low. Fabrication is from your specification or will be designed completely to your needs by our engineering department specializing in welded construction. Graver engineers work closely with you from the proposal of your work until the completed construction is turned over to you in operating condition. Write for estimates and recommendations.

Vulcalock Rubber Lined Tanks

Through contract with the B. F. Goodrich Rubber Company, we manufacture, under their patent, tanks and steel plate with vulcanized gum rubber lining.

GRAVER TANK & MFG. CORP

EAST CHICAGO, INDIANA

Manufacturers and Erectors—Special Steel Plate Construction— Water Conditioning Equipment

Construction and Enterprise

CONCISE, TIMELY BUSINESS BUILDING OPPORTUNITIES IN FIELD OF INDUSTRY

New York

BROOKLYN—Alba Copper Sheet Metal works has been incorporated with $10,000 capital to manufacture sheet metal products, by C. Eisenhauer, 26 Court street.

NEW YORK—American Ventilating Corp. has been incorporated with 120 shares no par value to manufacture air-cooling devices, by Davis, Wagner & Heater, 120 Broadway.

NEW YORK—Michaels Trailer Corp. has been incorporated with $5000 capital and 150 shares no par value to manufacture trailers and machinery, by Bernstein & Lipke, 250 West Fifty-seventh street.

Pennsylvania

HARRISBURG—Secretary of property and supplies, Capitol building, Harrisburg, will receive bids until Aug. 31 for construction of a garage 60 x 160 feet, with heating, electric lighting and plumbing, at Milford, Pa.; additions to garage at York, Pa., 25 x 80 feet, 30 x 80 feet and second floor addition 16 x 110 feet and 26 x 64 feet; garage and heating plant 60 x 165 feet, 40 x 45 feet and 30 x 70 feet, at New Bloomfield, Pa.

PITTSBURGH—Acme Iron Metal Co. has been incorporated with $15,000 capital to operate a scrap metal and second-hand machinery business, by Morris L. Landerman, 901 Broadway, McKees Rocks, Pa.

WILKINSBURG—Hanlon & Wilson Co. has been incorporated with $30,000 capital to manufacture machinery, by Ernest W. Glass, 2507 Graham boulevard, Wilkinsburg.

Ohio

AKRON—Akron Super Steel Castings Inc. has been incorporated with 150 shares no par value to construct and operate a foundry for production of steel castings, by Clyde B. Mitchella and associates.

Michigan

CADILLAC—Carson Cadillac Corp. has been incorporated with 1000 shares no par value to manufacture clamps, bolts, gaskets and castings, by H. Y. Carson, Cadillac.

DETROIT—Watson & Rose Mfg. Co., 12400 Strathmore street, has been incorporated with $10,000 capital to manufacture warehouse trucks, casters and other industrial equipment, by Glenn A. Rose, 15905 Glastonbury road.

DETROIT—Marine City Mfg. Corp., 1705 First street, has been incorporated with 100,000 shares no par value to manufacture iron, steel and metal products, by Adolf J. Preining, 2945 Cooper avenue.

Indiana

COLUMBUS—Cummins Engine Works, Clessie L. Cummins president, manufacturer of diesel engines, is erecting an addition to triple its output. The new building will be devoted to the manufacture of engines for motor trucks. New equipment will be needed.

CROWN POINT—City is planning to buy two diesel engines to furnish electric power for city lighting and pumping service. The new plant will cost about $28,000.

NEWCASTLE—Western Products Inc. has been incorporated with 1000 shares no par value to manufacture metal products and automotive accessories, by Clem J. Stetler and R. C. Steffen.

INDIANAPOLIS—Wilcox Non-Glare Reflector Co. has been incorporated to manufacture reflectors and other automotive equipment, by Roy L. Volstad, Meyer Kiser Bank building, Indianapolis.

VINCENNES—Vincennes Steel Corp. has been incorporated with $275,000 capital to fabricate structural steel, by F. L. Oliphant, J. L. Riddle, J. E. Oliphant and associates.

Illinois

CHICAGO—Ohio Metal Supply Co., 38 South Dearborn street, has been incorporated with $100,000 capital to deal in scrap metals, by Harry Harris, Richard C. Heun and A. L. Rittenberg.

CHICAGO—Cuyler Roofing & Sheet Metal Co., 4512 Lincoln avenue, has been incorporated with $5000 to conduct a general roofing and sheet metal business, by William John Buttenfender and associates.

CHICAGO—Ellison Draft Gage Co. Inc., 214 West Kinzie street, has been incorporated with capital of $5000 preferred and $10,000 common stock, to manufacture domestic, commercial and industrial appliances, by Louis M. Ellison and associates.

CHICAGO—Multiklipper Inc., 864 West North avenue, has been incorporated with $10,000 capital to manufacture machinery and devices, by William A. Peters and associates. O'Connor & Conroy, 19 South LaSalle street, are correspondents.

Southern States

WASHINGTON—Bureau of supplies and accounts, navy department, will open bids Aug. 16 on schedule 8416 for 1500 ball bearings for torpedo gyroscopes, delivery at Newport, R. I.; schedule 8399 for 11,910 steel packing boxes for smokeless powder, for delivery at White Plains, Md.

WASHINGTON—Bureau of supplies and accounts, navy department, will receive bids until Aug. 23 on schedule 8523 for four water-cooled vertical air compressors for delivery to east coast points; until Aug. 30 on schedule 8519 for one motor-driven grinding and polishing machine for delivery to Puget Sound, Wash.; until Aug. 30, schedule 8526 for four motor-driven sensitive drills for various deliveries.

Oklahoma

MUSKOGEE—Muskogee Refining Co. has been incorporated with $25,000 capital by Jack A. Talbot, Alexander building, Tulsa, Okla.

TULSA—Stilesford Machine Works has been organized by Carl Stiles and Fred Ford, formerly connected with the Nicholson Clock Co., Tulsa, to specialize in precision work. They have established a plant at 1906 East Sixth street, Tulsa.

Legal Notice

NOTICE OF PUBLIC AUCTION

Pursuant to the order of the Court of Common Pleas of Summit County, Ohio, the undersigned, receivers of The McNeil Boiler Company, will offer for sale at public auction all of the assets of The McNeil Boiler Company, excepting certain SureTrack patents and incidentals pertaining thereto, and three trucks, at one o'clock P. M., on September 2nd, 1932.

Said assets will be offered under two plans: Plan 1 (a) Lands and buildings consisting of 2.48 acres of land located at the southwest corner of Crosier Street and Sweitzer Avenue in the City of Akron, Ohio, having a frontage of approximately 574 feet along the lines of the Pennsylvania Railroad Company, 303 feet on Crosier Street, and approximately 55 feet on Sweitzer Avenue. Said premises have railroad switches extending through their length. The buildings thereon consist of boiler shop, tank shop, machine shop, blacksmith shop, pattern shed, and frame office building.

(b) Machinery, equipment, stock on hand and in process including all contents of all buildings. Said machinery consists of two Southwark riveters, 9 boring mills, 6 Breidenstein skid machines, 1 hydraulic riveter, flanging press, air compressor, bending rolls, 2 steam hammers, 3 planers, grinders, saws, metal cutters, welding machines, concrete mixer, hydraulic pump, induction motor, lathes, and other machinery necessary to the equipment of a boiler and machine shop. The stock in trade consists of casting steel plate, rivets, fittings and supplies. This subdivision includes also office furniture and all other equipment about the plant.

(c) Bills, notes, and accounts receivable.

(d) All patents other than the SureTrack patents and their incidentals.

Plan 2. (a) All patents other than the SureTrack patents and appliances.

(b) All other assets of the company including those listed under Plan 1.

Said sale will be conducted at the North Court Room on the third floor of the Court House of Summit County, Ohio. The terms of sale will be cash.

All interested persons are invited to inspect the premises and other assets of the company.

J. BEN CAMPBELL and W. W. MC INTOSH,
Receivers of The McNeil Boiler Company
NAEF and MC INTOSH, Attorneys for Receivers

Advt.